AMERICAN FORESTS

OCTOBER 1942

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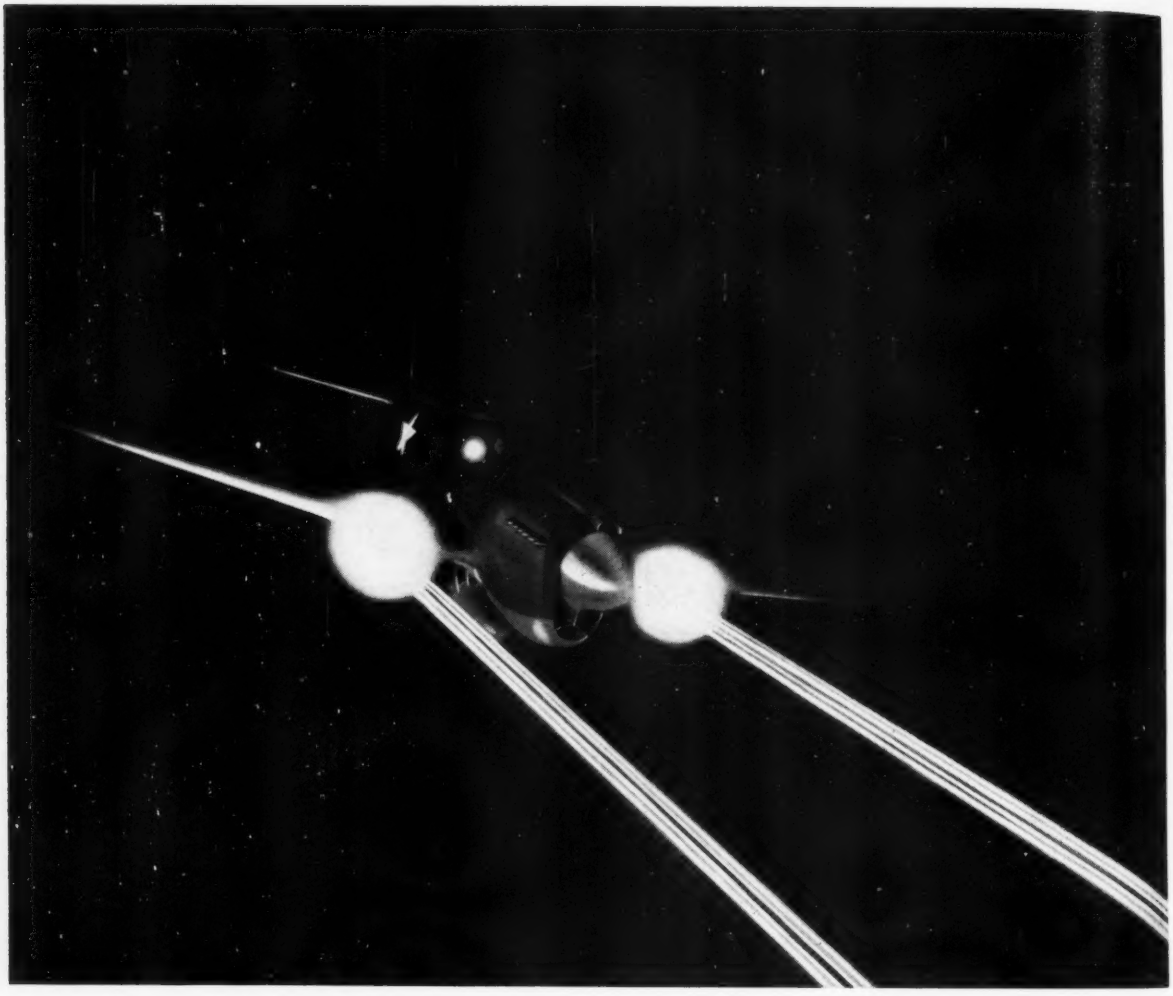

He's firing telephone wire at a Zero!

THIS fighter plane, with its six wing guns spitting fire, uses up enough copper every minute to make several miles of telephone line.

That's the right use for copper now — and it's the reason why we can't continue to expand our facilities to take care of the expanding Long Distance telephone traffic.

Right now, our lines are flooded with Long Distance calls. Most of them have to do with the war — they must have the right of way.

Will you help us keep the wires clear for war calls —industrial calls that send a plane down the assembly line — military calls that send it into the air against the enemy?

You can do it by keeping your own calls as few and as brief as possible. And you'll be bringing Victory that much nearer.

Bell Telephone System

American Forests

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OVID BUTLER

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THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of its magazine—AMERICAN FORESTS—designed to keep before the people of the country important conservation questions and issues, the Association carries on educational programs in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. All its resources and income are devoted to the advancement of conservation in the interests of public welfare. All citizens are welcomed to membership.

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The Readers' Column

WHO OWNS THE REDWOODS?

SIR: Having recently mailed the munificent gift of two dollars to the "Save-the-Redwoods League" in California, I have been wondering and trying to organize my thoughts on big trees in general, and these redwoods in particular.

Why is it, in the first place, that in peace as well as in war, we are always too late? And again, why do my two dollars and other similar contributions have to be spent on protecting the rightful property of the people of the United States from themselves? These redwoods, and other ancient trees, are irreplaceable and are definitely not in the crop tree class. A crop forest is one, or should be one, which reproduces itself in five generations at the most. These redwoods, which have been growing from sixty to ninety generations are in the Egyptian pyramid class, not to mention Westminster Abbeys and Canterbury Cathedrals galore. Why, I say, do they have to be cut at all? If the answer is that our civilization demands their destruction, then I should suggest that our civilization be organized on a different basis. Let the tax money for sewers and subways in California come from a more efficient handling of crop forests and not from the shameless destruction of these giants, the like of which will never be seen on earth again.

In the courtroom scene in "Alice in Wonderland," the rule is made that all persons over a mile high are to leave the room. If I were the President of the United States, and God grant that I may never be, I should so juggle the laws, that all trees of every kind, of ten feet in diameter and over, should automatically become wards of the national government and saved for better or for worse for generations unborn.

Beauty, whatever that is, and utility, whatever that is, do not clash in the long run. Beauty represents happiness and utility also represents happiness and these trees by merely being beautiful, are supremely useful.

What a shelled-out, desperate feeling we experience when we see cut forests, smashed tops, burned stumps, and eroded hillsides. The beauty is gone; replanting brings it back only superficially and the utility temporarily gained, soon becomes futility. The result is an increasingly impoverished heritage which we hand down to our descendants. While temporarily president, I should also slip in a clause prohibiting the cutting of incense cedar for any purpose.

Never having seen the redwoods, I stay at home and mail futile checks for two dollars, and write letters such as this.—*Samuel Mason, Jr.*, Darlington, Maryland.

AFA BOOK IN BRAILLE

SIR: I am sure you will be interested to know that the book "Rangers of the Shield" has been transcribed into Braille and presented to the Library of Congress by my mother, Mrs. Lillian E. Hoff, of Ridgewood, New Jersey.—*E. C. Hoff, Jr.*, Canton, North Carolina.

DEAR MR. HOFF: Thank you very much for your note advising us that through the generosity of your mother, Mrs. Lillian E. Hoff, our book, "Rangers of the Shield," has been transcribed into Braille and presented to the Library of Congress. We had already been requested by the Congressional Library for permission to have this done, and were very glad to grant the permission, but we did not know who was the generous donor.

Please be good enough to extend to your mother the appreciation of the Board of Directors for this splendid cooperation in making these interesting stories of forest rangers available for the blind. She may like to know that this is the first time one of our publications has been made so available.—*Ovid Butler*, executive secretary, The American Forestry Association.

REMEMBERING 1910

SIR: I enjoyed Mr. Koch's article, "Remember 1910," in the June issue of AMERICAN FORESTS as I was there (Idaho), having a minor part when Wallace burned on August 20.

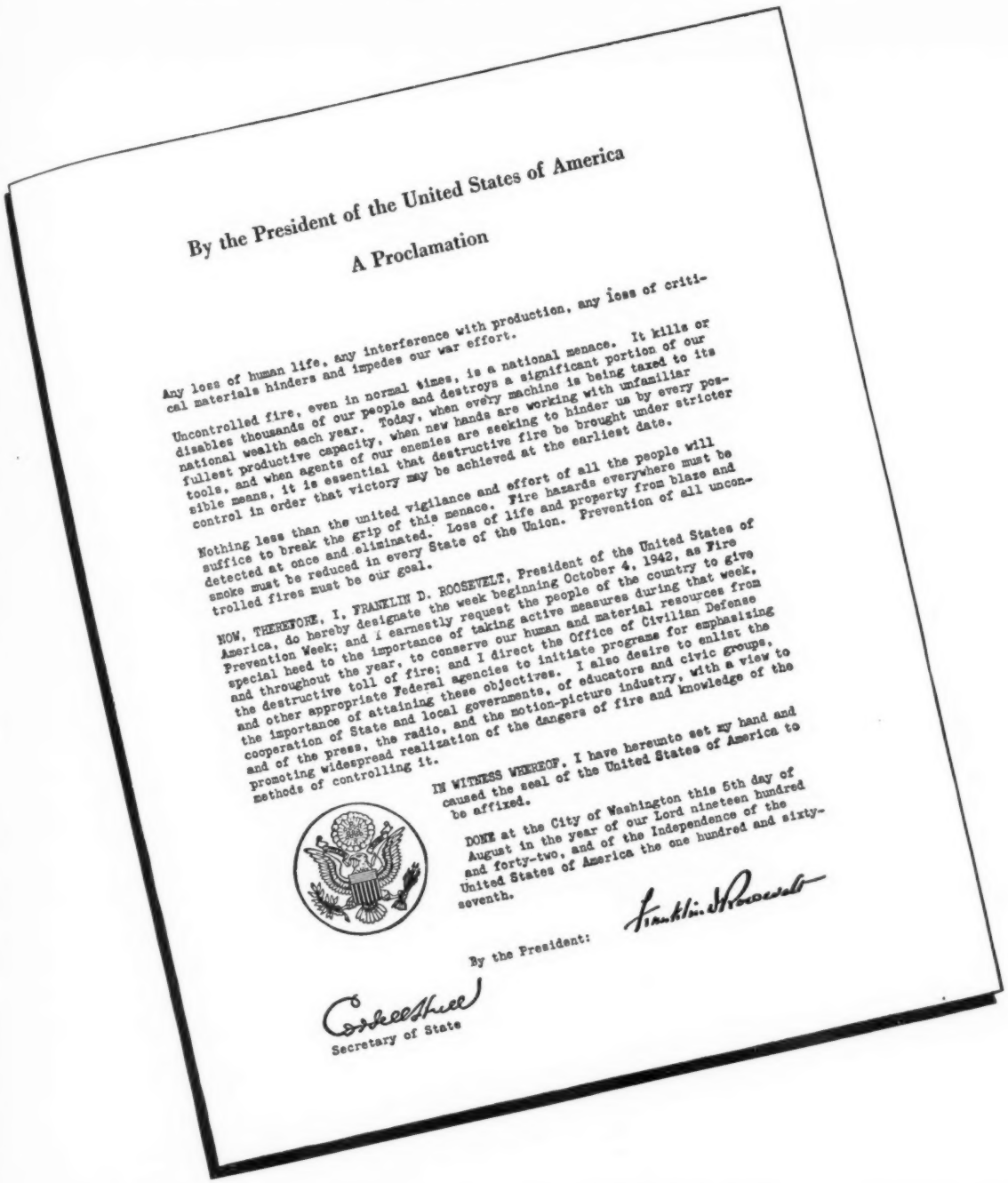
I have worked on many forest fires with my good friend Ed Pulaski (Forest Ranger Edward Pulaski, one of the outstanding heroes of the great fire of 1910). For equipment we used the old style mattocks and grub hoes. I told him once that some day we would have these tools made of light steel that would be just as satisfactory and not such mankillers! I wrote to one of the tool manufacturers to see if this could be done and the reply came that it was not practical.

However, Pulaski went to work on the idea and before his death developed the present "Pulaski tool" that is now standard fire fighting equipment.

In my A.E.F. No. 1 tour of duty I drew a logging and sawmill job in France which was said to have been the most extensive of its character in Europe. Had a small part in getting the French to use Douglas fir to replace oak and beech in battle areas.—*Erle P. Dudley*, former Captain, Engineers, A.E.F. No. 1, Kellogg, Idaho.

FIRE PREVENTION WEEK—OCT. 4-10

CARELESS MATCHES AID THE AXIS



By the President of the United States of America

A Proclamation

Any loss of human life, any interference with production, any loss of critical materials hinders and impedes our war effort.

Uncontrolled fire, even in normal times, is a national menace. It kills or disables thousands of our people and destroys a significant portion of our national wealth each year. Today, when every machine is being taxed to its fullest productive capacity, when new hands are working with unfamiliar tools, and when agents of our enemies are seeking to hinder us by every possible means, it is essential that destructive fire be brought under stricter control in order that victory may be achieved at the earliest date.

Nothing less than the united vigilance and effort of all the people will suffice to break the grip of this menace. Fire hazards everywhere must be detected at once and eliminated. Loss of life and property from blaze and smoke must be reduced in every State of the Union. Prevention of all uncontrolled fires must be our goal.

NOW, THEREFORE, I, FRANKLIN D. ROOSEVELT, President of the United States of America, do hereby designate the week beginning October 4, 1942, as Fire Prevention Week; and I earnestly request the people of the country to give special heed to the importance of taking active measures during that week, and throughout the year, to conserve our human and material resources from the destructive toll of fire; and I direct the Office of Civilian Defense and other appropriate Federal agencies to initiate programs for emphasizing the importance of attaining these objectives. I also desire to enlist the cooperation of State and local governments, of educators and civic groups, and of the press, the radio, and the motion-picture industry, with a view to promoting widespread realization of the dangers of fire and knowledge of the methods of controlling it.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States of America to be affixed.

DONE at the City of Washington this 5th day of August in the year of our Lord nineteen hundred and forty-two, and of the Independence of the United States of America the one hundred and sixty-seventh.

Franklin D. Roosevelt

By the President:

Cordell Hull

Secretary of State

PREVENT FOREST FIRES

BIG TREES

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidate in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, send for the Association's special announcement of this Big Tree hunt. Mail your nomination with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

TANBARK OAK KING

ON Mount Tamalpais, in Marin County, California, stands this king of the tanbark oaks, *Lithocarpus densiflora*. Growing on an exposed ridge about 2,000 feet above sea level at Rock Spring, the great tree has developed into a magnificent specimen.

Nominated by R. H. Menzies, of San Francisco, the monarch has a circumference of eighteen feet and eleven inches, four and a half feet above the ground. Its height is sixty-five feet, its limb spread sixty feet.

The tanbark oak is found from southern Oregon southward through California and is widely known in its range by its common name because of the extensive use of its bark for tanning on the Pacific Coast, where it is as important in the leather industry as chestnut oak, *Quercus prinus*, is in the East.

The Tanbark Oak Giant on Mount Tamalpais

FROM numerous sources comes the rather disquieting news that all is not well on the lumber front. The trouble, it seems, springs from policies which have permitted labor surpluses in some war industries, such as shipyards, at the expense of labor shortages in others. The lumber industry is in the latter category. The net result is that the War Production Board has been forced to revise its estimates of lumber production for 1942. It now indicates that national output of lumber will be more than 6,000,000,000 board feet short of estimated essential requirements.

The situation in the Pacific Northwest, where the production of lumber ranks only with food in importance, is strikingly set forth by Fred Niendorff, financial editor of the Seattle *Post-Intelligencer*. He writes:

"The lumber industry (western Washington and western Oregon) at the moment is short 15,000 men. It has 40,000 in the logging end, 35,000 in the mill end, a total of 75,000 when it should have 90,000 to produce what the Army and Navy are clamoring for.

"A special report received from forty-five operating mills by the West Coast Lumbermen's Association reveals that during the past six weeks their combined output has dropped twenty-eight per cent, as a direct result of loss of manpower.

"One of the biggest operating mills in the state (Washington) reports a 100 per cent labor turnover in the logging end of its business."

As against this situation, Mr. Niendorff quotes a "high placed government official" as saying he had "received an informal report that 35,000 workmen could be taken out of the West Coast airplane and shipbuilding plants without affecting the volume and quality of production."

How many of these are experienced woodsmen lured out of the logging camps by higher wages is not known. Clearly something needs to be done to get them back.

* * *

MOUNTAINS like men become bald. As to mountains, this is strikingly noticeable in the Southern Appalachians where many bald domes or peaks within the limits of tree growth have for years puzzled people living in or visiting the region. Why, they ask, is this mountain "bald-headed" while others nearby are shaggy-locked with dense growth of trees or shrubs?

Botanists, geologists, foresters and other scientific men have ventured numerous answers. Some attribute the bald tops to natural causes; some to human agencies. Among causes suggested are forest fires, overgrazing, winter storms, prevailing winds, land clearing, and local soil conditions unfavorable to tree growth. It seems generally agreed that many of these balds are of ancient origin and one theory is that they were caused by the Indians who cleared certain mountain tops as camp sites or as hunting corrals. But from the wisdom of the learned men or the folk-lore of the region there has come no conclusive or commonly accepted explanation.

Recently Wm. H. Gates, Professor of Zoology at Louisiana State University, advanced a new and interesting theory. After observation and study during eight consecutive summers in the Nantahala Mountains of western North Carolina, Professor Gates believes the cause may be a tiny wasp which attacks at irregular periods the red oaks of the region causing twig galls which in the course of repeated attacks kill the trees. Epidemics of these insects, according to Professor Gates' observations, appear localized to mountain tops in the oat grass or oak heath climax which corresponds to the altitudinal range of the balds. While admitting that there are many bald peaks in the Southern Appalachians obviously caused by land clearing, Professor Gates observes that they are at a lower altitude than the natural balds which range close to or over 4,200 feet.

As to the gall wasp, he says, not much is known about it. Its infestations, it appears, are rare occurrences, seldom witnessed and not recorded. Its attacks are limited to small areas and are spotty and the insects quickly disappear. But in the course of centuries Professor Gates believes they have killed the tree growth on hundreds of mountain tops which are known today as balds throughout the Southern Appalachians. Readers interested in Professor Gates' theory, which remains to be proved, can obtain details of his observations and conclusions by requesting a pamphlet recently written by him and obtainable from the Louisiana State University Press, University Station, Baton Rouge, Louisiana.

Ovid Butler

Americans this year must meet the frigid blasts of winter with from ten to thirty per cent less oil and coal, prime heating fuels. But thanks to an immense national woodpile, every home can be kept comfortably warm. In the rural districts, in the villages and small towns, wood often can be substituted for oil and coal—in the larger towns and cities it can be used as a supplementary fuel in the furnace, more often in the fireplace

WOOD AS A WARTIME FUEL

By K. W. WOODWARD and ERLE KAUFFMAN

Photographs by the U. S. Forest Service

IN VIEW of certain shortages this winter in oil and coal, prime heating fuels, what part can wood play in keeping the average American home warm? More important, to what extent can wood, as a fuel, be made to contribute to the winning of the war?

No one, of course, can clearly foresee what the months ahead will bring, but this much is known: fuel requirements will be the largest in the nation's history; railroads, carrying staggering wartime loads, are already overburdened and the oil tanker fleet, operating near capacity, has suffered heavy losses to enemy submarines.

Coal is still the main source of energy for industrial power—power now turning out guns, tanks, aircraft and munitions. Railroads, as well as shipping, are carrying this coal in ever-increasing quantities to the war plants, along with vast amounts of ores and metals. Their capacity to haul fuel for home consumption is diminishing. The oil situation is even more critical. Thus the average American homeowner, urban or rural, must meet the frigid blasts of winter with from ten to thirty per cent less coal and oil than in previous years. He and his family will keep warm, but only if these prime fuels are properly conserved and, when possible, supplemented by other fuels, such as wood.

Under favorable conditions and if properly utilized, wood can become an important agent in the conservation of coal and oil. It also can be used as a substitute for these more vital fuels, thus contributing greatly to wartime transportation problems. It all depends upon the location of the consumer, the kind of heating equipment he has, and how much he knows about the heat values of the various kinds of wood.

For example, in rural areas where wood is readily obtainable, it would be good patriotism and possibly good economics to heat—and to cook—with wood,

Thinning a young forest not only provides good fuelwood—here stacked to dry—but improves the stand, producing straighter, healthier, more valuable trees

provided the consumer is equipped with a wood-burning furnace or stove, or if his furnace can be simply converted to the use of wood. New equipment, such as the modern slow combustion wood heater, may be difficult to obtain, as materials used in its manufacture are subject to priorities.

Urban householders, on the other hand, may find wood more difficult to obtain than oil—and perhaps more expensive. It all depends upon how near they are to wood sources. If the distance is such as to require rail or shipping space, wood will be a scarce and precious commodity. Even long hauls by truck may be out of the question. Technicians of the U. S. Forest Service are of the opinion that wood for fuel is not feasible at the present time if it must be transported more than fifteen or twenty miles.

Regions of the country likely to have the most serious rail traffic problems are those that are most highly industrialized—the Middle Atlantic States, New England, and the Central and Lake States. It is here also that fuel consumption is highest; here that the use of wood as fuel can be of greatest help. Fortunately, according to Robert T. Hall and M. B. Dickerman of the Lake States Forest Experiment Station, who have just completed a survey of the use of wood fuel in wartime, stands of timber containing the best species for fuel are concentrated in these regions, as well as the Southeast.

"About one-fourth of our total volume of hardwoods," they report, "is in the northeastern section of the country, comprising New England and the Middle Atlantic States. The Lake States contain nearly twelve per cent of the hardwood volume, the Central States eight per cent. Thus these regions where fuel consumption is heavy have more than forty-four per cent of the total hardwood stands of the nation."

Obviously, it is in the rural districts of these regions, in the villages and small towns, that wood can be substituted for coal and oil or become an important supplementary fuel. Often there are sawmills or woodworking plants near at hand, and local use of wood from waste from such plants not only will relieve transportation facilities but is good forest conservation practice. Also, it is in these areas that wood burning equipment, for both heating and cooking, is most likely to be found, or easily converted.

In the larger towns and cities it may be neither feasible nor desirable to attempt large scale conversions of heating plants to wood use, though in many cases where wood is obtainable it may be possible to use it along with coal in existing coal burning plants. But the city dweller in great numbers has his fireplace and it is there that wood can be used to supplement and conserve other fuels. With a practical knowledge of woods best suited for heating, and with care in its utilization, the urbanite can keep cheerfully warm. At the same time he can contribute in a real measure to the winning of the war.

One of the first things a householder should learn is the heating value of certain woods. According to Mr. Hall and Mr. Dickerman, a cord of one of the heavier hardwoods such as oak, hickory, beech, birch, hard maple, rock elm, or locust weighs about two tons and has approximately the same heating value as a short ton of coal of high quality, or 200 gallons of domestic fuel oil. One and a half cords of such wood as gum, sycamore, soft maple, slippery elm, shortleaf pine, or Douglas fir are required to equal a short ton of coal in heat value. For such woods as cedar, poplar, white pine, spruce, cypress, basswood, or catalpa two cords are required.

Add these government experts: "The presence of considerable quantities of resins or oils, as in longleaf pine and eucalyptus, tends to raise the heating value of wood, but causes it to be consumed faster. Pound for pound, resin gives about twice as much heat as wood; it also produces more smoke. The bark of some species, such as birch, Douglas fir and shagbark hickory, has a higher heat value than the wood, but the bark of other trees, such as the cedars, has low fuel value and leaves much ash. Generally the softwoods burn more readily than the hardwoods, and the lighter hardwoods are consumed faster than the heavier species. The pines, for example, make a quicker, hotter fire and last a shorter time than birch, but birch gives a more intense flame than oak. Oak and hickory burn more slowly and give a steady heat.

"American beech has long been a favorite fuelwood in the northeastern and central regions of the country, having heating value nearly equal to that of the best oaks. Eastern hophornbeam, sometimes called ironwood, is also very heavy and yields much heat per cord. Red mulberry and hawthorn, though small trees, are highly esteemed as fuel. Of about the same value as sycamore is black tupelo, known also as black gum (black gum, like elm wood, often 'sobs' along instead of burning freely). For open fires, chestnut, butternut, hemlock and spruce are not generally in favor because they throw off sparks."

Another way to gauge the fuel values of wood is by comparison with high grade coal worth fifteen dollars a ton. On this basis, such species as hickory and white oak should be worth fifteen dollars a cord, fitted and delivered; sugar maple, beech, yellow and black birch, red oak and white ash fourteen dollars a cord; paper birch and soft maple twelve dollars a cord; elm and gray birch ten dollars; hard pine and chestnut eight dollars; and spruce, aspen, white pine and hemlock seven dollars a cord.

Few householders are able to distinguish between the various species of wood except in a general way. And while a reliable wood dealer will do this for them, here is a simple guide that anyone can follow. If the wood cannot be dented with the finger nail it is hard and heavy, of high heat value, and worth, in comparison with coal, from fourteen to fifteen dollars a cord; if it can be lightly dented with the finger nail, it is moderately hard and heavy, or in the ten to twelve dollar a cord class; if easily dented, the consumer knows the wood is light and soft, worth around seven or eight dollars a cord.

As to size, most fireplace wood is cut sixteen inches long. The proper diameter depends upon the method of burning. A common though poor way may be described as the tepee method—that is, the wood is piled up like a tepee with the kindling inside. If kindling is plentiful there is a bright fire for a short time, but the stacked firewood quickly falls apart.

The standard and more desirable method is to place a large log, from twelve to twenty inches in diameter, in the back of the fireplace, fit the andirons against it, and then start a kindling fire. As this burns smaller logs are placed on the andirons and a good fire is on its way—a fire that can be maintained with little attention because the andirons are sloped back enough to keep the wood against the backlog by gravity. If the logs are straight, contact is maintained and at the same time there is sufficient space for the circulation of air,

Tops of trees, large limbs, and even rejected sawlogs, ordinarily waste in logging operations, make good fuelwood. Not only will such utilization provide needed fuel, but the removal of this material from woodlands reduces fire hazards

which means good combustion. In fact burning is so rapid with dry wood that some householders do not use andirons, substituting a piece of strap iron, four or five inches wide, and so bent that it will hold a bed of ashes in the fireplace. This retards combustion and prolongs the life of the fire.

Still another method of building a fire without andirons is to use two logs of about the same size, one as a backlog, the other placed at right angles to it when the kindling fire is burning well. In this manner the fire is kept going at the point of contact, which may be renewed frequently merely by pushing the front log in. A piece of kindling added under the front log and parallel to the backlog will cause the fire to burn vigorously when desired. This is called the "kick and run" method because of the ease with which the front log may be pushed with the foot into contact with the backlog. A word of caution about this method, however—it does not work well with wood, such as elm or pine, which will burn back from the point of contact and pour smoke into the room.

Although it is more expensive, packaged wood, a recent development, may prove of considerable importance in the present fuel situation. Its great value is its guarantee of quality and dryness, not to mention convenience. It is easy to handle and may be purchased in units to suit the consumer's storage space. The maximum size of units, or crates, of packaged wood is about 1/100 of a cord, or approximately fifty pounds of hardwood. This will burn from four to five hours in the average fireplace.

Another form of wood fuel is compressed logs and briquets made from sawdust and wood waste. Being drier than ordinary wood, they have a slightly higher heat value per pound of material, and ignite so readily that no kindling is required. They burn uniformly, are free of soot and smoke, and contain less than one per cent ash. On the basis of fuel value, a ton of this compressed wood should be worth three-fourths as much as a ton of good coal. However, it is expensive and, in some eastern cities, difficult to obtain.

If wood is used in a furnace, large pieces, at least two feet long and ten inches in diameter, will give the best results because they burn longer than a greater number of smaller sticks. As a matter of fact, once a bed of coals is made, the consumer will do well to use sticks as large in diameter as the furnace door. It should be remembered, however, that in an ordinary coal furnace a hot fire cannot be secured with wood if the firebox is more than half full. Space must be provided for the combustion of gases thrown off by the burning wood.

Cooking with wood is quite a different matter, as a quick, hot fire is generally desired. Hence firewood for this purpose should never be more than three inches in diameter and seldom more than sixteen inches long. And here again it should be remembered that the firebox of the stove must not be more than half filled. If gases are not completely burned in the firebox they will burn again in the chimney, leaving deposits of creosote.

Whether wood is used in the fireplace, furnace, or in a cooking stove the consumer should make sure that it is dry. Its moisture content will make a very great difference in its fuel value. For example, wood that is thoroughly air dried and worth ten dollars a cord, would be worth but eight dollars if allowed to dry but three months, seven dollars if green.

According to Mr. Hall and Mr. Dickerman, "when wood is burned, the water in it must be raised to the boiling point, converted into steam, and finally superheated to the temperature of the flue gases. Hence the heat required to drive off the moisture does not serve to warm the stove or the furnace. Generally from twenty-five to forty-five per cent of the weight of green wood is water, and in such species as cottonwood and willow it may be even sixty per cent. By drying out much of this water, the heating value of the wood is considerably increased. For example, green shagbark hickory weighs about 800 pounds more a cord than air-dried wood of the same species, the difference representing mostly water. This extra moisture reduces the heat value about one-sixth.

"Dry wood kindles much more readily than wet wood, and in a stove or domestic furnace a fire of dry wood is generally easier to tend and regulate. It is said, however, that some species such as gray birch and aspen give better results if not too dry, being consumed less rapidly."

The consumer, of course, has no sure, quick way of determining how dry wood is. The best method is to inquire carefully when the purchase is made how long it has been seasoning. Normally, fuelwood should be dried outdoors, in four-foot lengths, for six months and then moved under cover for an additional two months. This will give good results for most species, especially if the wood is cut into sixteen or twenty-four inch lengths at the end of the outdoor drying period.

If firewood is to be purchased "in the round," that is, with the bark intact, as with birch logs, a longer drying period under cover is desirable. The reason for this is that bark holds moisture in the logs.

Thus wood can and will play an important role in warming American homes this winter. And in so doing, it reflects other years in which, as a fuel, wood ranked in importance with food and clothing. According to R. V. Reynolds, forest economist of the U. S. Forest Service, as recently as a hundred years ago 1,000 cords of wood were burned in this country for every ton of coal produced.

A conservative estimate of the aggregate fuelwood used in the United States in 300 years, he explained, reaches the staggering total of nearly 12,500,000,000 cords. The quantity is equivalent in round figures to 1,000,000,000,000 cubic feet of standing timber, or seven cubic miles of solid wood, not including the bark.

"Solely in bulk of timber consumed," said Mr. Reynolds, "fuel has accounted for more than half

the total volume cut from our forests for commodity use, and more than twice as much as lumber, its nearest rival."

Although the use of fuelwood has decreased steadily for more than fifty years, he declared, the quantity cut is still nearly half as great as it was at the peak, and second only to lumber as an item of commodity drain. "In 1940 there was no indication that any other commodity, even pulpwood, would dislodge fuel from second place in drain tabulations. Judging solely from the trend, it would be unwise to contemplate a consumption of less than 45,000,000 cords a year before 1960."

Despite this history of past usage, fuelwood today is and should remain a by-product of forest and woodlot. And now, more essentially than ever before, only sound forestry practices must be applied to its harvesting for the fireplace, the furnace, or the stove. The main purpose, where utility is concerned, of every stand of timber is to produce good lumber and other wood products needed for the prosecution of the war and rehabilitation in the post-war years. Fortunately, there are means of harvesting sufficient firewood to meet winter needs so as not to affect the more important forest crops. To see that these methods are applied is as much the job of the consumer as it is that of the timber grower and forester. Patriotism as well as common-sense demands that this be done.

This Vermont farmer is one of many on whom the nation must depend for its supply of fuelwood this winter

In reviewing this phase of the use of wood as a wartime fuel, Mr. Hall and Mr. Dickerman have this to say: "The cutting of fuelwood may be done in such a way that the value of the woodland property is improved; if done unwisely, it may be destructive. Unfortunately, a good deal of the forest fuelwood is at present cut from sawlog material that should be reserved for lumber or similar uses. This represents a serious loss to the owner of the timber; from the viewpoint of the public, it is wasteful of a natural resource. Indiscriminate cutting of other classes of trees for fuel is also to be discouraged. Trees near the house that are valuable for shade or windbreaks should not be cut solely to obtain fuelwood. Stripping the woodland completely is not a good practice, except to clear the land for crops or pasture. The habit of cutting all trees large enough for fuel in immature second-growth stands is, in some regions, a greater evil than the misuse of sawtimber.

"In cutting for fuelwood, therefore, individual trees to be removed should be selected carefully, consideration being given to the local market for sawlogs, poles, piling, mine timbers, fence posts, or pulpwood; if the operation takes the nature of an improvement cutting or a thinning, the profits of the owner will be increased.

"Opportunities to obtain fuel from nearby logging or other woods operations should not be overlooked. Tops of trees, large limbs, and even rejected sawlogs are usually left on the ground. Sometimes trees are accidentally knocked down in the course of logging or cut to get them out of the way. At present, this material ordinarily goes to waste, but it can easily be worked up into cordwood. The timber owner, in most instances, will be glad to have it removed to reduce the fire hazard. Cull trees and those of inferior species left standing by the loggers often have no value except as fuel.

"Many stands of sapling size are so badly overcrowded that their (*Continuing on page* 477)

With suspicion and animosity, the young eagles on the Islands greeted us —as they doubtless did the Jap invaders—with angry, guttural croakings

BALDY OF THE ALEUTIANS

By BEN EAST

WHEN the first Japanese landing forces to set foot on North American soil came ashore last June on Attu, Agattu and Kiska islands, volcanic land dots at the western tip of the little known Aleutian chain of Alaska, they encountered one native-born American that they must have hated with all the venom of which their Oriental hearts were capable.

That was the bald eagle.

Emblem of America, gracing her coins and the standard of her flag, this free lord of the skyways stands for everything that Japan detests. His is the wild heart, the fierce and proud. His the broad sweep of flight above a free land. He knows lonely valleys and silent mountain lakes, the upper highways of the sky, the thin blue air, the far checkerboard of fields and woodlands spread beneath his unfettered wings. The wilderness that cradled America is still his sanctuary. The passion for liberty burns in his heart and speaks in his wild voice. Cage him and he turns listless and broken-hearted, his eyes lose their fierce fires beneath the frowning white brows, and even the golden color of his great beak and talons turns lustreless and pale.

The legions of Japan have good cause to hate this eagle that is the trademark of free men. And on the lonely beaches of Attu, thousands of miles from the green forests where we know him, in a queer land beyond the halfway meridian that marks the eastern world from the western, they met him for the first time. The sight of American eagles soaring above the snow-streaked hills of Kiska, the sound of their wild screaming over the rocky beaches of Attu, must have rankled deep in the hearts of the invaders.

It's a strange place to find Old Baldy, on those treeless, volcanic islands where the green moss is like a thick carpet underfoot and the tallest shrubs are scrub alder and willow that do not reach to a man's waist.

Here in continental United States he is known as a bird of the forest, haunting its deep solitude, building his bulky aerie of dead sticks high in the fork of a towering tree that lifts its crown well above the lesser growth around it, a fitting site for the castle of a king.

But in the treeless Aleutians the Sky King has had to adopt more humble ways. He ranges through all

that chain of unpeopled islands that lie between Bering Sea and the north Pacific and in their entire length he does not find a single tree in which to perch his nest. So he makes the best of an odd situation and nests on the ground, building up a low platform of dead weedstalks, grass and dry kelp, usually choosing as his site a rocky hummock not far from the shore, where he can overlook the empty reaches of the sea and the lonely beaches that are his hunting ground. For in Alaska, as wherever else he is found, Old Baldy is a beach comber. He relies on the shoal tide flats, the kelp beds and the shore to furnish a major share of his livelihood.

In the minds of most Americans the bald eagle is closely associated with all of Alaska. The unfortunate fact that the Territory has for many years paid a bounty, totally unjustified, on this majestic bird has advertised far and wide that eagles are abundant there. I suspect it has even created the impression that they are more plentiful than is actually the case.

We cruised the southern shore of Alaska in the summer of 1941, from Ketchikan to the western end of the Aleutians, aboard the government patrol ship *Brown Bear*, and while we saw a great many eagles, there were fewer than I had expected. Certainly there were no concentrations to offer even a frail alibi for the bounty system the salmon interests have managed, by political influence, to keep alive.

Happily, the eagle bounty is dying out, if it is not already dead. No bounties were paid in the summer of 1941, for the reason that the territorial treasury had run out of funds appropriated for that purpose. The game officials of Alaska are whole-heartedly opposed to the bounty and there is reason to hope it will never be restored. Eagle hunters were still killing the birds along the coast while we were there, however, and collecting the yellow feet in hope the bounty would be paid later.

We saw eagles in every district of Alaska visited by the *Brown Bear*, but nowhere in great numbers.

The Aleutians,—a long chain of islands, rocky and rugged,—are wildly beautiful but have no trees for Old Baldy to nest in so America's king of birds must build his aerie of dead weedstalks, grass and dry kelp on rocky hummocks on the lonely beach

They were perched on the beaches or searching for food in the kelp beds of sheltered inlets at low tide. Wherever we went along the creeks while the summer salmon run was on we encountered a few eagles keeping watch at strategic fishing spots. They soared up with measured, labored wingbeats from the foot of low waterfalls and it was plain they had gathered beside those dark pools because salmon were crowded there in incredible numbers and fishing was good. Old Baldy is an inveterate fisherman wherever he is found. But he is as fond of dead fish as of live ones and many of the salmon he feeds on have spawned and been cast dead upon the gravel bars. Those who have investigated say the toll he takes of the Alaskan salmon horde is insignificant.

The big brown bears like the salmon pools for the same reason as Old Baldy and on more than one Alaskan creek we found evidence that Brownie and Sky King share common fishing grounds. It is almost certain, however, that the eagle gives way when the bear lumbers out of the thickets. The great King Bear is undisputed overlord of the Alaskan wilderness. It seems unlikely he tolerates lesser royalty at his dinner table.

As we moved westward from Kodiak Island toward the Aleutians we left the last of the forest behind. Local residents told us that from the Alaska Peninsula to the limit of his range in the treeless islands we would find the bald eagle a ground-nesting bird. It seemed strange to think of this lordly ruler of the skies stooping down to an earth-bound castle, but after all necessity is the mother of many queer customs among birds and men alike.

The Aleutians are a lonely chain of islands, rocky and rugged, mist-hung and storm-swept, beautiful with a wild and pagan beauty, cruel and empty with the limitless emptiness of the northern seas that wash them. Beginning at the western tip of the Alaska Peninsula, they reach westward eleven hundrd miles like a curving saber blade thrust between Bering Sea and the north Pacific.

Actually the long chain is the top of a submerged mountain range resting on the ocean floor. Many of the islands are made up of rolling green hills, with cliffs that rise like sheer sea walls from the boulder-strewn beaches. Others are symmetrical mountain cones, dark and ominous near the sea, immaculate under a shroud of endless snow on the higher slopes.

The only place in America where the eagle is unprotected, Alaska still pays a bounty on this majestic bird. This one was killed by hunters in the Aleutians who collected the feet, hoping to claim the bounty later on

Sunshine and blue sky are rare along those foggy coasts but a day of fair weather in the Aleutians is a thing not soon to be forgotten. The white mountain peaks soar against the clear sky, the mossy hills are verdant and soft, the brown kelp is a velvet carpet along the empty beach and even the inhospitable sea loses its leaden color and turns blue and friendly as any southern ocean.

Above many of the Aleutians live volcanoes send their everlasting smoke feathering skyward, like chimney plumes from the snow-freighted roof of a giant's house. A few of the islands are barren and almost lifeless, carpeted with the cinders of recent upheavals. On one we climbed a thousand feet above the sea, struggling up mossy, rock-buttressed slopes so steep that we crawled part of the way on hands and knees, and at the top we stood on the rim of a dead crater and looked eight hundred feet down upon as lovely a blue lake as I have ever seen.

We continued to see eagles frequently along the Aleutians but it was not until we went ashore on Tanaga Island that we discovered our first ground-perched aerie. We landed hoping to photograph a small band of sea otters in the kelp beds of Tanaga Bay. We had gone only a short distance down the beach, walking in tangled wild rye grass that reached to our shoulders, when a resentful blue fox set up a shrill and angry outcry from his den door on the steep green hillside above us.

He barked sharply and persistently, a strange squalling cry. Our ears told us he was nearby but our eyes could not make him out, perhaps because he was hidden in a shallow ravine or behind a sheltering rock. While we looked for him I noticed a pair of bald eagles, with heads as white as the endless snows on Tanaga Mountain across the bay, soaring on motionless wings above a hummock farther down the beach.

The hummock was about seventy-five feet high, steep-walled and rocky. Its sides were covered with clumps of coarse grass. It was hardly more than an isolated, rocky chimney on the beach. The eagles were turning in slow, lazy spirals just above it and their angry cries came plainly on the sea wind. It is not unlikely that we were the first humans they had ever seen but they were voicing their resentment at our invasion of their lonely island exactly as a pair of eagles would do if a picnic party invaded their domain of sand dune on the beach of Lake Michigan, five thousand miles from Tanaga. It was obvious the distressed and angry birds were keeping watch above their nest.

It took us no more than fifteen minutes to scale the rock chimney with our cameras. The two fledgling eagles that awaited us there, with the last gray down of youth showing through their new plumage, looked exactly like the American eaglets I have seen in many nests back in the Middle West and in the Lake Superior country. They greeted us in the time-honored fashion of young (*Continuing on page* 480)

We were apparently the first humans they had ever seen, but—eventually—the young birds permitted us to make movies at close range

TREES THAT ARE THE

Windbreaks of Eucalyptus Protect California's Ora
Lemon and Grapefruit Groves from Damaging C

The eucalyptus, vigorous grower, is proving an ideal windbreak tree for citrus groves

MEN often use one type of creature to help them control another. Dogs are trained to shepherd sheep, cats to police mice, and harmless insects guard against pests. But enterprising Californians have applied the principle to the vegetable kingdom. Trees are being used to protect other trees.

Living things do not long survive in places that challenge their existence too severely. In nature, sufficiency balances need; God plants them where they grow. But men have been rearranging the world ever since they entered it, and the transplanting of trees from their native homes to alien climates has been an ancient and continuing experiment. The new environment often does not agree with immigrant trees, however. They cannot always adjust to strange soil and climatic conditions, or perhaps are defenseless against the invasion of insect pests or plant diseases.

The first orange trees were brought to California in 1873, and though their number has increased by hundreds of thousands, it has been a hard-won expansion. Climate, insects and disease have threatened the existence of citrus orchards, and only persistent effort, plus the help of other trees, has overcome their enemies.

Mealy bugs had almost won a war against orange trees when someone discovered that common ladybugs could clean up a mealy bug infestation and enjoy it. These little brown beetles were nurtured and imported in great numbers. Scarcely a mealy bug has been found in California orange trees since.

Unfriendly temperatures are still such a crop and

Anemometer (shown at right) tests reveal that eucalpytus, or blue gum, windbreaks reduce wind velocity, and the resulting damage to orchards, from twenty-eight to forty per cent

ROTHERS' KEEPERS

By RUTH RINGLE

grove menace in California that it is doubtful if Lloyds would consider an orange grove a good long-time insurance risk. All kinds of apparatus have been tried to keep occasional freezing temperatures out of groves, the most successful being "smudge pots" —oil burned in groves when a frost warning is broadcast. These "smudge pots" cover the beautiful southern California towns with a pall of soot, but they save many oranges.

Monterey cypress, at first used with eucalyptus, was found too susceptible to disease

Another weather threat to citrus groves has been partially eliminated in a way that, instead of smudging the landscape, adds beauty. Windbreaks of guardian trees are protecting orange, lemon and grapefruit groves from desiccating winds. The verdant, fertile acres of southern California are neighbor to one of the most sinister deserts in the world—the Mojave—and hot, dry winds sweeping from it across citrus groves do an enormous amount of damage.

During the wind-free years of the 1920's, packing house records of Villa Park in Orange County showed a shipment average of 565 carloads a year. During four windy years of the same decade shipments averaged only 318 cars of fruit, little more than half as much as in good years. After the wind scourge, growers harvested 390,703 boxes less of oranges than before, with an annual financial loss of $671,000. It was estimated that the loss of fruit during bad wind years amounted to destruction of around 3,500,000 boxes of fruit, with additional damage to trees.

Professor Woodbridge Metcalf, state extension forester, has been gathering facts and figures for ten years on the use and value of windbreaks to curb the damage of these intermittent winds. After many experiments and tests, there is little doubt that a good windbreak protects orange groves from the desert's blighting breath as effectively as a stern chaperon protects a maiden from the breath of scandal.

Anemometer tests were conducted in various orchards to measure wind velocity with and without protecting high trees, and to determine the extent of effectiveness. These wind-measuring instruments were placed twelve feet from the ground—slightly above the crown of the average mature orange tree—at varying distances behind windbreaks. To show the unconfined power of gales, check instruments were also placed in the open.

One test was made near King City, on lands of the California Orchards Company. The check instruments, set in an open bean field 1,000 feet from any

An excellent windbreak of Monterey cypress, one of the few remaining examples of this type

obstruction to wind movement, showed an average daily maximum velocity of about twenty miles an hour during the summer. The anemometers in the lee of a nearby orange grove windbreak of thirty-five-foot eucalyptus trees told a different story. The first of these instruments was placed 100 feet from the blue gums and showed a wind velocity reduction of thirty-four per cent. Moved 200 feet from the windbreak, the average and maximum wind velocities were forty-nine per cent of those in the open.

A winter test was made by a Villa Park grower. Two anemometers were set up. One was put in an unprotected orange grove and the other was placed 500 feet in the lee of a stalwart blue gum and Monterey cypress windbreak having an average height of between ninety and 100 feet. Hourly readings of the two anemometers were made during a severe December windstorm, and showed that the windbreak stopped from twenty-eight to forty per cent of the gale.

The importance of adequate height and fullness in windbreak trees was brought out in this same orchard. Another severe storm caused high loss of fruit in unprotected acres. During this storm a double row of sixty-foot blue gums gave good protection to thirteen rows of fruit trees. But a single row of forty-foot blue gums furnished adequate protection to only seven rows of trees. A row by row count of fruit dropped during the storm was the gauge of comparative protection.

These tests satisfied orchard technologists, but the average orange grove owner is more impressed by the record of trees and crops. When rows of protective windbreaks give an orchardist a bigger seasonal check from the packing house than his unprotected neighbor, it is convincing proof of value received for money and effort spent in maintaining the guarding trees.

Comparative records were kept of two groves in the same district. Both groves had equal fertilization, irrigation and care, the only difference being that one was fully protected by windbreaks while the other had only its own leaves to protect it from vagrant winds. But air currents can change overnight from vagrant to criminal, and when a thirty-mile gale whipped through the valley, the unprotected grove was badly damaged.

Records of the two groves gave convincing proof that citrus trees in windy areas thrive a great deal better when guarded by their more sturdy brothers. Forty per cent of the protected grove's crop was number-one grade, while only twenty-four per cent of the unprotected grove's fruit was graded first class. The total yield of the protected grove was 585 boxes, with a value of $1.10 a box. The unprotected grove produced only 188 boxes valued at seventy-eight cents a box.

Packing house records of twenty-six groves were compared one season. All had comparable care, soil conditions and methods of treatment, but half of the groves were supported by windbreaks and the other half were not. The thirteen protected groves averaged a return of $230 an acre while unprotected groves brought their owners but $138 an acre.

When trees are left unprotected from high winds there is more far-reaching damage than loss of the current crop. Such trees often suffer a severe loss of foliage and sometimes branches are killed. Trees subjected to recurring wind damage become deformed and weakened, and are more susceptible to attack by disease and insects, particularly red scale.

Strangely, the most effective and practical windbreak tree is not a native (*Continuing on page* 474)

ARMBANDS IN THE FOREST

Triple-FS Wardens of Civilian Defense Are Organizing for the Fall and Spring Fire Seasons

By JAMES WARDEN

THE peacetime soldiers of the fire lines are off to the wartime firing lines, or to the equally vital production lines, and the forests of America are in danger. But, as in many another zone of American life which has been left vulnerable by war, the volunteer wardens of Civilian Defense are organizing to fill the ranks.

The warden with the armband, so familiar a figure in every target area, is now to patrol the woodlands as a member of the Forest Fire Fighters Service. On the pack trails and on the fire lines he will man the tools and machinery of fire control. The insignia on his armband is a red pine tree on the conventional white triangle of Civilian Defense, surrounded by a blue circle. The armband is an international symbol, cutting across all lines of geography and language. It has not appeared before in the forest, and its appearance now betokens a population made alert to the dangers of fire in fields and woodlands.

The Forest Fire Fighters Service—the name has already, in this age of alphabets, been shortened to a manageable Triple-FS—was created by an administrative order dated July 11, 1942, and signed by James M. Landis, director of the Office of Civilian Defense. David P. Godwin, assistant chief of the Division of Fire Control, U. S. Forest Service, was appointed national coordinator. He returned to Washington late in August from a tour of the West, having arranged for the appointment of state coordinators and for the training, organization, and direction of squad leaders and fire fighters under the leadership of local coordinators. All officials are chosen from existing fire control organizations, federal, state, and private.

Meantime, with the fire season in the West drawing to a close, urgent steps were being taken to organize in the eastern and southern states. State coordinators have already been named for Maryland, Ohio and Pennsylvania, in addition to the western states of Arizona, California and New Mexico. Before this issue goes to press formal appointments will also be made for Massachusetts, New Hampshire, New York, Connecticut, Delaware, North Carolina, Mississippi, Missouri, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Colorado, Utah, Nevada and Idaho. Appointments in the remaining states, particularly in the East and South, will be completed by early October.

"Just how many 'going' FFFS units will be available for the fall fire season in the East and South cannot be predicted," said Mr. Godwin, "but there will be some." The FFFS will probably show up best for the early spring season in these regions.

That even some units are now about ready for active duty is due largely to the excellent organizing and training of volunteers that was already accomplished prior to the creation of the FFFS. When it became evident a year and a half ago that the CCC

was being heavily reduced and probably eventually would be liquidated, all agencies—federal, state and private—set about reviving some of the old cooperative arrangements in practice before the days of the CCC. As a result, thousands of men were enrolled for voluntary duty and training. Therefore, when the FFFS was created, it was able to draw from a ready-made pool of volunteer manpower, thoroughly trained and ready for action.

The FFFS takes on a potential burden additional to the normal peacetime battle with 200,000 forest fires a year. There is the chance of sabotage by arson, and the chance of incendiary bombs dropped by the thousands in forest areas that are strategic for one reason or another. Fire in the woodlands might threaten military or industrial establishments, smoke from forest fires might help enemy aircraft and hinder friendly aircraft. The armband comes into the forest in wartime and it may have a wartime job to do.

Like other volunteer Civilian Defense organizations, the Triple-FS is mobilized by the OCD. For example, the Civilian Defense Council registers the applicants, certifies workers after their training is completed, and issues insignia, seeing that they are not misused or misrepresented. As an operating group, the FFFS fits into the professional framework of established organizations, is trained by them and works under their direction, in cooperation with local defense councils, of course. In other words, after they are mobilized, the volunteers act mainly with existing forest fire protection agencies, just as the auxiliary policeman is an extension of the regular police force, the auxiliary fireman of the fire department.

The Forest Service, the Extension Service, and the Soil Conservation Service of the U. S. Department of Agriculture, for example, will, with the aid of local defense units, supervise the training and work of the FFFS on lands under their respective jurisdictions. The Department of the Interior will train recruits for protection work on national parks, Indian lands, fish and wildlife reservations and lands of the Grazing Service and the General Land Office. The Tennessee Valley Authority will train its own volunteers. State and county forest agencies will prepare units for service on state and county forests and parks. Private timber protection associations will serve in the same capacity for certain areas of privately owned timberland.

The U. S. Forest Service is playing a major role in organizing the FFFS. Working through the Timber and Related Facilities Committee of the Office of Civilian Defense, the Service was active in the creation of the FFFS, and it was at the request of Lee Muck, assistant to the Secretary of the Interior, who is chairman of the committee, that Mr. Godwin of the Forest Service was appointed national coordinator. The Extension Service of the Department of Agriculture is likewise carrying an important load in organizing the FFFS, particularly in gaining the cooperation of rural and farm fire protection organizations. After the initial stages of organization, however, the FFFS will be a completely cooperative effort with the protection agency having the greatest interest in a particular area carrying the burden of responsibility.

The duties and responsibilities of the civilian forest fire fighter are officially set forth as follows:

"The forest fire fighter will personally exercise every care in the use of fire and he will aid in the education of his neighbors, school children, and the general public in the need for preventing fires.

"In addition to giving his own time to secure training, he will, in case he is selected as a squad leader, help train men in his locality to assist him in the discharge of his duties.

"The forest fire fighter will be on call to go to a fire and work on it until released by the responsible protection officer. The forest fire fighter, when engaged in his normal civilian occupation, will be constantly on the alert and in case he discovers a fire he will take initial action to suppress the fire and will notify the proper protection officers."

The fire fighter is required to complete twelve hours of training before he is entitled to the designation, and to the armband. Previous experience may, in the judgment of local protection officials, qualify the applicant at once, without new training. He may then become a squad leader and start schooling others. The course consists of lectures, demonstrations, building fire lines, and a general acquaintance with the tools, machines, and philosophy of fire control. The latter, of course, puts prevention of fire ahead of extinction of fire.

Training manuals have already been developed and issued by a number of states. An example of such a manual is one issued by State Forester Anton J. Tomasek of Illinois, which illustrates the type of training aids which state coordinators are expected to develop. The Southern Regional Office of the U. S. Forest Service at Atlanta has also developed a guide to help the states in the development of local manuals.

According to Mr. Godwin, actual field training programs will be devised by the state coordinators and carried out by their local coordinators. "We are urging," he said, "that the proven techniques of demonstrations, participation and practice be followed, to include actual fire line building experience and practice in the operation of various kinds of fire equipment. Through the device of appointing local coordinators from all of the interested protection agencies, it is hoped to mobilize all technical training ability that exists in the field.

"Protection agencies, particularly in the South where there is so much unprotected area, realize that the training load may be very heavy. Consequently, it is expected that the state coordinator will manage the rate of enrollment to insure that there will be adequate talent available to train the enrollees soon after their enlistment. Some of the enrollees will, of course, have previous experience or will have been trained under other cooperative efforts, but it is expected that there will be refresher courses for all by the next fire season."

American citizens and (*Continuing on page* 472)

WHEN THE MILLS GO DOWN

Michigan's Upper Peninsula is Laying the Ghosts of Its Old Logging Towns

By CLAY PERRY

"WHAT are we going to do," asked a group of Michigan's Upper Peninsula lumbermen a little over twenty years ago, "when the mills all go down?"

This same question was being asked also by mining men, by manufacturers, merchants, teachers and workers.

The white pine era was already over. The last big harvest had ended at the turn of the century and the great stands of merchantable hardwoods were being rapidly cut. Ghost towns were becoming more numerous than new settlements; farming wasn't prospering, neither was grazing, as luckless herders discovered after importing great droves of cattle and sheep from the West. Vast areas of cutover land, much of it burned over as well, were eating into the reserves of the owners for taxes. There was not a state forest, a state park, or a town or school forest in the entire region. Nor was there public demand for an organized fire-fighting system. Only

Norma Whalen

Norma Whalen

The white pine era is over for the Upper Peninsula of Michigan, and with it went many of its great sawmills. But a new idea in land utilization has gripped this thrice exploited region — an idea that may keep modern mills, as these, from turning into ghost towns

Edward Dreier

On the site of one of the first logging camps in northern Michigan (upper) has grown modern Blaney Park (lower), a unique adventure in private forestry and recreation

in the eastern end of the Upper Peninsula was there a tiny national forest.

A meeting was called in February of 1910, at Menominee, on the Michigan-Wisconsin border, a city where there had once been a hundred sawmills in operation, chewing up the seemingly endless stream of pine which floated down the river. Already ninety per cent of those mills had gone down.

The Menominee meeting resulted in the organization of the Upper Peninsula Development Bureau. Its chief purpose at the time was to promote agriculture.

The axiom that "farm follows forest" was what prompted this movement. Trainloads of immigrants were brought in and sold cheap land, most of it submarginal—land that raised little except hay and potatoes. It proved a bad investment for those pioneers, whose farms to a discouraging extent soon went back to forests of scrub trees.

Following this farm-boom failure the bureau invited ranchers in Wyoming and Montana to bring their starving herds of cattle and sheep to the pasture lands of the Upper Peninsula. This was in the spring of 1918 when the government owned the railroads and freight rates were low. In the fall, when the roads went back to private owners, freight rates soared and meat prices dropped. Ranchers who sold their stock did so at a loss; those who decided to winter their herds in Michigan failed.

In 1921 a small but successful advertising program was launched to encourage tourists to come to the North Woods. But what did this man-made wilderness have to offer except fishing, hunting, boating and some magnificent scenery, interspersed with weary, repellent miles of stumpland, coursed by unsurfaced roads?

The writer drove through the Upper

Abrams Aerial Survey Corp.

The remodeled logging town as seen from the air. In the midst of a 33,000-acre woodland, Blaney Park is a vacationist's paradise

Peninsula in 1922 on a pioneer motor-camping trip that had taken him, first, through the wilds of Ontario's northernmost route, via Ottawa, Mattawa, North Bay and along the northern shores of Lake Huron to The Soo, thence across the Upper Peninsula to Menominee. It required three days to travel less than 300 miles because of deep sand, mud and frequent detours. The general impression of the country was that it was a land of desolation, save along the borders of the lakes—and at that time there were no good roads coursing the shores.

The reclamation and restoration of the thrice raped forests of the Upper Peninsula had just begun. They could scarcely be expected to produce another crop for decades. But in twenty years the region has become a vast experimental area for the establishment and development of national forests, state forests and parks, game sanctuaries and hunting areas, and public and private resorts and camps. Today its forests are guarded by ninety fire lookout towers. And less than twenty-five acres of forest were burned over last year.

Kimball—Detroit News

At Nahma, on the Sturgeon River, a 55,000-acre "backwoods college" is being developed. Here is a typical outdoor classroom

It has established tree nurseries which produce annually millions of seedlings for reforestation; there are fish hatcheries, wild fowl refuges, and hundreds of miles of paved highways as well as well-graded gravel roads. Almost forty per cent of the total area of the Upper Peninsula is now owned or controlled by state or federal forest and park services. Taxes on forest land have been greatly reduced. On logged-over land they have been cut from five to ten cents an acre. With this and with successful protection from fire, there is now incentive for owners to hold and reforest their lands. They are doing it.

All of this is a result of a vigorous cooperative movement in which the federal government, the state, the counties, towns and schools, the conservation department, the state police, educators, colleges, the CCC, the NYA and an aroused citizenry have participated.

Meanwhile, far-seeing private citizens were at work on projects designed to prevent more ghost towns from developing when the mills all went down. There are two excellent examples of such salvaging, one in full and successful operation, the other in embryo.

Blaney Park, midway between Escanaba and The Soo along U. S. No. 2, is a 33,000-acre swanky resort, open all year, built upon the remnants of the first modern sawmill and logging camp in northern Michigan. The "company town" of Blaney was established in 1902 as a model logging town and boasted two-story houses, cottages for the white-collar employees, and a schoolhouse. The whole town, in 1909, was bought by the Wisconsin Land & Lumber Company for $365,000, along with 22,000 acres of surrounding woodland. This company, a Michigan corporation, continued logging at Blaney, but with more attention to "saving the young stuff" with a weather eye to the future. When the Simmons Company to the south became interested in the manufacture of metal furniture, their 11,000-acre woods, extending to the broad beaches of Lake Michigan, was added to the Blaney holdings—now 33,000 acres in all, with a considerable stand of spruce and hardwood. Thus Blaney was saved from becoming a ghost town.

G. Harold Earle, the present head of the Wisconsin Land & Lumber Company, as well as president of Blaney Park, has directed the expenditure of over $500,000 on the park, achieving a new kind of resort. Not only is it a playground but also a wildlife laboratory, an outdoor school for the study of nature, and a magnificent hunting (*Continuing on page* 479)

The Last Frontier

As Present-Day Pioneers Call the "Breaks" of the Snake River in Oregon

By ANNE CRAWFORD ALLEN HOLST

Finger Board Trail zig-zags up from the canyon and the roaring Snake

DURING the summer of 1940, my husband and I made a pack trip to the Breaks of the Snake in Oregon. It is here the Snake River flows through Hell's Canyon in what is perhaps the most awe-inspiring spectacle in the Northwest. The canyon is 1,800 feet deeper than the Grand Canyon of the Colorado and five miles narrower. From Hat Point to the bed of the Snake in the rocky canyon the elevation drops 7,000 feet.

There is a good road to Hat Point and many tourists drive in for the magnificent view it affords. Also, in the remote Eagle Cap Wilderness Area of the Wallowa National Forest, to the west of the canyon, horse pack trips are very popular. But "outsiders" do not often make pack trips through the Breaks of the Snake. From the time we left the top in August until we climbed out again we saw no other human beings—that is, except the Christys.

The Christys, who live on Cow Creek in the Breaks of the Snake, were the only inhabitants of the great canyon that summer. They had "stayed down" to irrigate the alfalfa fields of the sheep ranch, though all the other ranchers had moved "out on top" for the hot months. They liked it down there, liked the idea of pioneering in what they called the "last frontier in the nation."

From Cow Creek to the "outside" is six hours of hard riding—much longer if you set out afoot. There is no other way to get out, or in. The one exception is the mail which Uncle Sam's mailman "runs" in by boat each Friday.

The womenfolk who live in the canyon are hardy. They have to be. Mrs. Marie Christy told about a neighbor who rode by her house one winter's day with her two-year-old daughter astride her own small horse. The little girl was sound asleep.

"Sarah," called Mrs. Christy to her neighbor, "that child is asleep."

The horses were stopped and the neighbor, producing a soft pillow from the roll on her saddle, picked up the child and transferred her to her own horse, where she lay cradled between the horn of the saddle and her mother. When she had finished her nap, she would again be placed in the saddle of her own horse to take care of herself on the rough trail.

"Why, last winter," Mrs. Christy continued, "a young girl came up from Portland to visit my neighbors above on the creek here. She was eighteen years old. When she had gone home, my neighbor came down to tell me about her.

"'Marie,' she said, 'I don't know what the world is coming to. Here that girl is eighteen years old and she can't shoe a horse yet.'

"So you can see that the women folk, as well as the men, have to be a hardy lot on this 'last frontier.' I was talking with Mr. Dorrance, who lives over by the Snake River, a couple of years ago. I asked him how his children were.

"'Marie,' he said, 'the boy is doing fine. He is going to be a horseman. But I'm worried about the little girl. She can't ride yet.'

"'But, Heavens, man—how old is she?' I asked him.

"'Why, she is two years old,' said Mr. Dorrance."

To arrive at the Christys we had made our way leisurely down into the canyon over a well-shaded trail from Thomason Meadows where we obtained our pack horses and my saddle horse—my husband electing to make the trip on foot. Indeed, so simple was our introduction to the canyon that we were unprepared for the type of country to be encountered later on. One of the first surprises was the sudden change in temperature. On the meadows we wakened to find heavy frost, but by early afternoon on our descent to the Imnaha River the thermometer stood at 112 degrees Fahrenheit. Later the Christys told us that it practically never freezes in the canyon. Even in midwinter, when snow is piling up on the rim, summer temperatures prevail in the canyon, and such plants as cactus flourish. To us, this seemed amazing.

Another thing to amaze us was that ranch houses in this remote area are always open to the traveler. One was expected to make use of the hospitalities of the house, the only requirement being that of true western etiquette—to leave everything as you found it. Locks are unheard of in the Breaks of the Snake.

As we followed the trail down the Imnaha River, we saw deer in profusion. Coyotes were also plentiful. There were no trees to shade our trail, so we toiled along under the blazing sun, making our first overnight stop at the Tibbetts Ranch, located at the junction of Cow Creek and Lone Pine trails. There was little water in the small stream and the spring was no longer flowing, but we managed to satisfy the horses and indulge in the novel luxury of a hot bath in the only bath tub in the Breaks. This tub, we were

A. J. Coats

A. J. Coats

Above, Hell's Canyon, deeper than the Grand Canyon of the Colorado; center, a view of the Breaks with the Snake River coiling in the distance; and, below, the Christy Ranch house

later told, was brought into the canyon on the back of a small burro.

It was hot the following morning as we started up Cow Creek. There were still no trees, but cactus was everywhere giving the country a character similar to that of the Southwest. Even my husband, a native Oregonian, was amazed to see so much of it. After tortuous miles of climbing we entered the head of Cow Creek Canyon and found, much to our relief, a rock-bedded stream shaded by huge pines. From there (*Continuing on page* 478)

GIVE ME A HEART OF REDWOOD

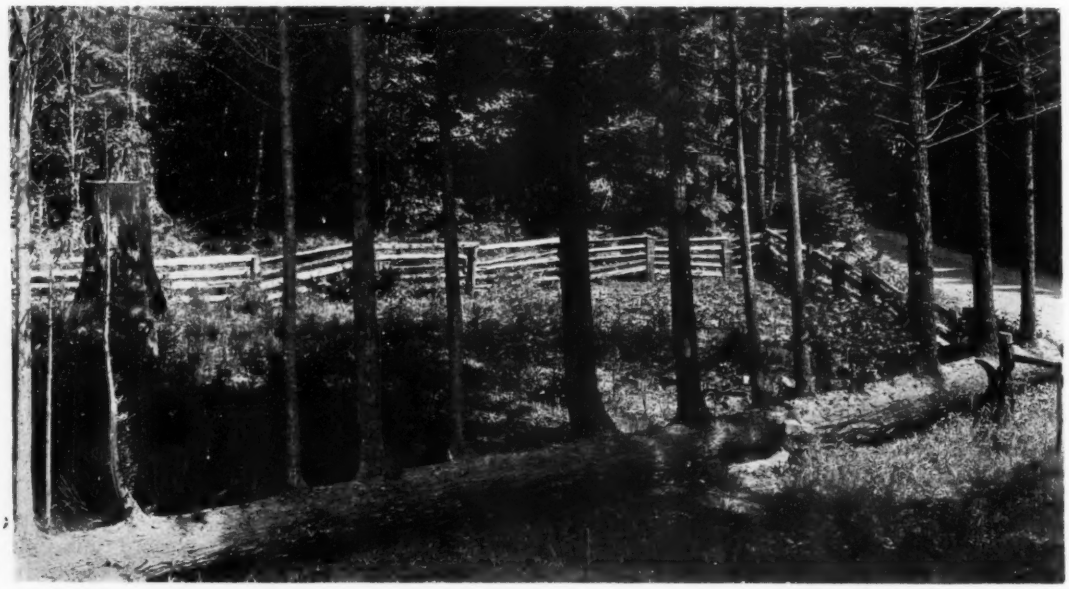
By P. H. WILLIAMS

NEAR Crescent City, Northwest California, over thirty years ago a redwood tree was cut and a section sawed out to make way for the road shown at right of the picture. The section cut out was about forty feet in length.

The light spot near the center of the picture shows a three foot contact with the soil, and the nourishment of all the new trees comes through roots sent down into the soil at this point. In all thirteen branches are shown. Three of these shoots are over ten inches in diameter and more than thirty feet high.

The fallen tree was about three feet in diameter and believed to be 200 feet high.

The *Christian Science Monitor* featured this story and picture some time ago, and the story inspired the poem.



Patterson Pictures, Santa Rosa, California

The gallant, strong-hearted redwood

God, give me a heart of redwood,
When hope of success grows dim;
When gone is the will to conquer,
And lost is the zest and vim
From life that has grown oppressive—
A meaningless fight for breath—
While dreams of a peace that's lasting
Invite to the realms of death.

God, give me a heart of redwood,
When fallen and bruised I lie,
Where those that I long had trusted
Have left me to bleed and die.
When shame and defeat and failure,
And knowledge of what I appear,
Have crushed me to earth a victim
To sorrow and pain and fear.

God, give me a heart of redwood,
When trust in thy love dies out;
When doubt and my earth-born weakness
Have put all my faith to rout;
When life is a somber cavern,
And hope as dim as its light;
While prayer for the healing sunshine
Brings only the chill of night.

God, give me a heart of redwood,
To build from the dust again,
And lift a new growth toward heaven,
In spite of the loss and pain;
To grasp from the wrack around me
The help that the world denied,
And rear an enduring triumph
Where else than redwood had died.

EDITORIAL

WE CAN ALL WEAR ARMBANDS

THERE is something challenging about the Forest Fire Fighters Service recently mobilized by the Office of Civilian Defense. First, because it is to perform a wartime job that needs to be done, and second, because the job is one that those of us on the home front can and must do. It is, in essence, a citizens' battle against an enemy so long tolerated that now, under the impact of total war, has grown to new and menacing stature.

Briefly, the FFFS is the forest equivalent to the now familiar city air raid warden service. And like these urban units it is a volunteer organization. The appeal is to patriots of a single mind to win this war and to win it as quickly as possible by reserving for the grim business every resource at the nation's command. Such citizens will be trained and organized into a nation-wide forest protection force of unprecedented strength and scope. The machinery is already in operation under the experienced hands of existing forest protection agencies—federal, state and private. The immediate job is to mobilize the needed manpower.

For the same reasons that city air raid wardens operate effectively only in their own sectors, those living in or near woodlands or forest regions are best qualified for fighting fire with the FFFS. But this does not mean that every man, woman and child, regardless of locale, physical fitness, or occupation cannot serve with them. The best way to conquer fire is to prevent fire, as every homeowner knows. That is why we teach our toddling youngsters never to play with matches, why we periodically check on our house wiring and heating equipment, why we fuss and fume when a thoughtless neighbor burns leaf accumulations on a windy day in autumn. The instinct for security for ourselves and for our families is too strong to ignore such hazards—in the home.

But for some reason this instinct is dulled the moment we close the front door behind us. We not only tolerate careless matches when we drive or hike through the woods, but occasionally indulge in tossing a few around ourselves. Too often along our railroads and our highways and around our industrial plants we fail to see the sparks our machines throw off. And on our farms we burn brush and grass whenever the spirit moves us, thinking only to do the job a safe distance from our houses. Security, it would seem, is having a roof over our heads. So long as this doesn't burn, we are safe.

We know that this isn't so. Or we should know it. The picture of economic and social displacement due to forest fires is altogether too recent and too plainly etched in broken lives and bankrupt communities to escape our attention if we would but look at it. The havoc wrought by streams in flood as they rip and tear at our fertile soils is too often the price we pay for fires in headwater forests which never should have burned. Two hundred thousand of these fires every year—more than 500 every day—is the result of our inattention, our indifference, or our carelessness.

This, however, is the language of peacetime, of an era which ended when bombs fell on Pearl Harbor on December 7, 1941. Today we no longer talk in terms of displaced communities, of flood waters. We are fighting a war, a hard and costly war, a war in which to waste a single resource, a single tree, is to jeopardize that security we value so much. And fire is waste, the most total of all waste, in the forest as well as in the home.

To defend the forests against the total waste of fire is the job of the Forest Fire Fighters Service. Under the expert direction of the best fire control men of such proven organizations as the United States Forest Service, the various state forest protection agencies, and private timber associations, thousands of able-bodied volunteer citizens will be trained to man the tools and machinery of forest fire suppression, to be on call, just as city air raid wardens are on call, in the hour of need. Theirs will be primarily frontline duty on the forest front.

In every town, city, and hamlet throughout the land millions of other citizens can and must serve with them. To this great army of volunteers will fall the all-important job of preventing fires, of eliminating at their source the eighty out of every hundred forest fires that are caused by the careless and thoughtless acts of man. Theirs will be the patriotic as well as common-sense duty personally to exercise the same care in the use of fire in the woods as they do in their homes. Theirs will be the responsibility, as teachers and missionaries, of seeing that others exercise this same care. There is no waste in a fire that never starts.

In all Civilian Defense work volunteer wardens must earn their designation—and the armband which symbolizes their service. The insignia of the forest warden is a red pine tree on the conventional white triangle of Civilian Defense, surrounded by a blue circle. On the fire-fighting line, a warden must complete twelve hours of vigorous training with the tools of suppression before he can claim his armband. On the fire prevention line there are no mattocks, shovels, or tractors, but there is training—self-training to achieve the habit of care in the use of fire, the training of others to follow this example. We can all wear the pine tree armband—if we earn it. And when we do, when a great fire prevention army is fully mobilized, the forests of America will contribute more effectively to the winning of that peace and security we are fighting for today.

AGAIN—KEEPING THE RECORD STRAIGHT

THIS spring, on March 19, with the nation facing the gravest forest fire emergency in its history because of the danger of sabotage and aerial bombing, the Board of Directors of The American Forestry Association by unanimous resolution called upon conservation agencies and forest users to dedicate their united efforts to forest activities that are of first importance in promoting the common cause of victory.

This resolution was transmitted to the President of the United States, to members of Congress, to the press, and to responsible government leaders, among them Secretary of Agriculture Claude Wickard, under whose department falls the United States Forest Service. The resolution, with letter transmitting it to the President, was also published in the April issue of AMERICAN FORESTS and was aggressively followed by a public campaign, which, with the aid of other non-official groups, contributed in large measure to providing $10,500,000 for the U. S. Forest Service for war emergency fire control.

During this campaign, several members of the field force of the Forest Service professed to read into the Association's resolution an ulterior intent to defeat the Service's long standing program of federal control of timberland owners and to encourage forest destruction in the name of winning the war. To counter the spread of these representations, the Association felt called upon to publish in the June issue of AMERICAN FORESTS an editorial entitled "Keeping the Record Straight," which clearly set forth the war emergency intent and purpose of the resolution.

Notwithstanding, on July 6, nearly four months after the adoption of the resolution and more than a month after publication of the editorial, Earle H. Clapp, acting chief of the Forest Service, replied for Mr. Wickard in a lengthy statement which was later mimeographed and circulated. Mr. Clapp's interpretation of the resolution and his representations as to its purpose and intent, continue to reflect incorrectly the position of the Association.

In view of this, and to clarify for Secretary Wickard and Mr. Clapp, as well as for those to whom the Forest Service statement was distributed, the unaltered position of The American Forestry Association in respect to taking leadership in publicly emphasizing those things clearly of first importance in the war emergency was restated by President W. S. Rosecrans on August 31 in a letter addressed to the Secretary of Agriculture. The resolution of March 19, Mr. Clapp's letter, and Mr. Rosecrans' reply, which speak for themselves, follow:

THE RESOLUTION

"Our country being now engaged in a life and death struggle in which the protection and use of our natural resources are essential to the winning of the war and the achievement of peace, the Directors of The American Forestry Association call upon all conservation agencies and forest users—federal, state, and private—to dedicate their undivided efforts to the doing of those things that are clearly of first importance within their field in promoting the common cause of victory.

"*In the forest field they hold that three lines of action now claim and should have undisputed priority.* They are:

(1) Protection of forest and related resources and of war industries, including power, water and transportation lines essential to their operation, against the impending danger of forest fires.
This is an immediately critical threat to our war efforts:
First, because in addition to normal forest fire hazards, sabotage by our enemies of our production of wood, our supply lines and operation of war industries through widespread setting of forest fires by aerial bombing and ground incendiarism is not only possible but probable this summer;
And, second, because adequate preparedness against such a contingency is not now assured. The danger is particularly acute on the Pacific Coast where vital war industries are concentrated and from which our prosecution of the war in the Pacific is based.

(2) Maintenance of continuous production of wood and other forest products essential to the prosecution of the war. Most of the war industries, the training of our armed forces and the shipment of supplies and equipment to the fighting fronts of the United Nations *is dependent in large part upon an uninterrupted production and delivery of wood in raw and fabricated forms.*

(3) Accelerated research in the use and production of cellulose, plywood, lumber and other forest products related to war needs.
Such research will not only promote the conservation of our forest resources but it will strengthen and speed our war effort by providing improved equipment and by helping to overcome shortages in other materials that are now or may in the future impede war action.

"We believe that the accomplishment of these objectives is vital to the winning of the war and that they should have the united and supreme effort of all individuals and groups in the forest field.

"To this end we urge that highly controversial issues, such as federal regulation of privately owned timberlands, be set aside until the war is won, without prejudice as to their merit or desirability when normal conditions of American life are reestablished."

July 6, 1942.

Mr. W. S. Rosecrans
American Forestry Association
Washington, D. C.

Dear Mr. Rosecrans:

Your letter of March 20 to the Secretary of Agriculture, enclosing copies of your letter to the President and the March 19 resolutions of your Directors, has been referred to me for reply. I regret that action on it has unavoidably been so long delayed.

I remember many pleasant and profitable discussions with you personally on numerous aspects of the forest conservation problem on which we seemed to be in substantial agreement. It is somewhat disturbing, therefore, to learn that there may now be some differences of opinion.

If I construe correctly your letter of March 20 to the President and the resolution which it transmits, they place chief emphasis on four more or less closely related points:

(1) They seem to carry the implication between the lines that the Forest Service is falling down on three important lines of work—intensified protection of the forest and related resources against fire, supplying the forest products essential to the war effort, and more forest products research.

(2) They appeal to the President to direct the Department of Agriculture and particularly the Forest Service, to discontinue their advocacy of public regulation to stop the destructive cutting of our forests. The theory is that because of the controversial character of regulation, such advocacy detracts from unified efforts to win the war, and that unity is more important than safeguarding our forests from destructive cutting.

(3) They try to have the Department, and more particularly the Forest Service, instructed to concentrate its efforts in forestry to winning the war, leaving measures which may be necessary for winning the peace for consideration after "normal" conditions are reestablished.

(4) They try to have the Department, and again more particularly the Forest Service, instructed to concentrate its public leadership on the three activities which you endorse, but I assume with primary emphasis on fire protection.

I want to discuss these points at some length because of their importance and also because they come from the only national conservation organization devoting its efforts largely or entirely to forestry.

Before doing so, however, I want to make it clear that nothing that I say in this discussion should be interpreted as questioning or belittling the importance of winning the war or of the efforts needed for it. When I speak of forest owners who are cutting destructively I am not forgetting the growing number of progressive owners who are taking care of their forests. For them I have nothing but praise. Public regulation is not being advocated to the exclusion of everything else as a cure-all, but rather as one of the most important measures in a much more comprehensive program.

The first point is the implication that the Forest Service is falling down on three important parts of its job.

If this has been or is true, I should say the Forest Service is subject to serious criticism. As a matter of fact, the Service has developed more comprehensive and more intensive plans to meet the fire situation which you describe than it has ever developed before in its entire history. Furthermore, it has made the most strenuous effort that it has ever made to put such plans into effect. The fact that some of these plans have not been put into effect earlier and more extensively is the result of disapproval in part or altogether of specific recommendations which have been pressed with great vigor. Our forest products research is going forward on a considerably larger scale than ever before. And we are doing more in this than in any previous war to see that our needs for forest products are met.

We are continuing our search for ways and means to strengthen our effort along all three lines. This search began as soon as it became apparent in late 1939 that the United States might be drawn into the war. While we have no exact measure, I would say that around half of the efforts of the entire Forest Service organization are going into war efforts of one kind or another, including the three which you emphasize.

If you know of instances in which we have failed to meet reasonable requirements, I should be very glad if you would inform me and I will see that an appropriate check is made.

Naturally I am for unity, the second point which you emphasize. One question in this instance is, how it can be obtained. There is the further question of whether it can be obtained. There is still another question of the price which would have to be paid for it. And there is the final question of whether it is really necessary to pay the price.

If the timberland owners who have been destroying their forests would agree to measures which would perpetuate these forests and thereby protect a public interest, which is almost universally recognized as vital, we could have had unity at any time, and we could have it now. Under the circumstances it seems to me that it is a legitimate question to ask why the responsibility for unity should not be placed on the timberland owners who are devastating their forests.

But if I read your letter aright, it holds that the responsibility should be placed on the public agency which wants to stop the destruction. It apparently advocates unity on the terms of the private owners who are destroying their forests or impairing their productivity. And their terms are that nothing be advocated—much less done—which will disturb even their peace of mind while they are destroying a resource in which the public has a very vital interest.

The price the public would have to pay for unity on these terms would be to allow anyone who wants to destroy his forest to do so, whether it were necessary or not, and regardless of how adversely it might affect the public interest.

The price is indicated in part by the fact that cutting has increased by about one-third over the 1936-40 level, and as nearly as we can judge from checks all over the United States, destructive cutting has increased correspondingly.

In some respects cutting is even more destructive than heretofore, because higher prices make it possible to cut smaller trees and market lower-grade material at a profit.

I shall want to refer later to the price which the public would have to pay in social welfare, which of course far transcends in importance any effect on the forests themselves.

This raises the question in my mind of why the public should pay any such price.

It also raises the question about what price, if any, private owners would have to pay if they were to stop destructive cutting practices. Possibly some private owners might have to forego somewhat larger profits, but even this is doubtful.

The only justification which I can see for the public sacrifice involved would be greater benefits in the production of forest products needed for war purposes.

But I have yet to learn of a single instance where destructive cutting on private lands has been necessary to meet war requirements. And more broadly, and with the fullest and most explicit recognition of the fact that essential war requirements must be met, I should regard it as a rather serious reflection on the resourcefulness of the American people if the best plan they can devise for meeting these requirements is to destroy the productivity of the resource on which they will have to depend for future peacetime needs, and unless they can be prevented, for those of future wars.

Considered realistically, I wonder if we may not be deluding ourselves if we think we can get unity.

You say that we won't get it if the Forest Service continues its efforts for public regulation. Disagreement would come primarily, I suppose, from the owners who want to continue their destructive practices without restraint.

But it would also come to a greater or less extent from those who sympathize with them and from their supporters. Incidentally, I must confess that I find it pretty difficult to understand why anyone should sympathize with these owners or want to support

them, or to try to hold back any agency, public or otherwise, which is attempting to get them to meet their public responsibilities.

I have a good deal of doubt whether we would get unity even though the Forest Service should discontinue its advocacy of public regulation. Indications are growing that considerable cross-sections of the public in some parts of the country where the destruction has been greatest have about reached the limit of their tolerance. They may be about ready to demand that action be taken not only to condemn the private owners, but also to condemn responsible public agencies if they do not act. I would not be surprised at any time to learn that something had touched the situation off. The really surprising thing is that the general public has been acquiescent and quiescent for so long.

My own point of view, in brief, is about this. The war needs for forest products must be met. The destruction of our forests or the impairment of their productivity, with the inevitable social aftermath, are wholly unnecessary to meet these requirements. Further destruction and impairment can be stopped only by public regulation. Practically, unity on any basis is doubtful. If responsibility is to be placed for failure to achieve unity, it should rest on the devastators and not on the public agency that is trying to stop it. The Forest Service is convinced that it will be serving the highest public interest by continuing its advocacy of public regulation. And that it will be doing private owners a service rather than an injustice.

The third point is that you want the President to direct us to concentrate our current efforts on three specified activities to win the war.

I have already indicated in general terms the emphasis which we are already placing on these three activities. To concentrate on them exclusively would, however, preclude major emphasis also on the measures which will help to win the peace.

Important among the reasons why we should win the peace is to avoid if possible the necessity for fighting and winning future wars. We won World War I, but we lost the peace, and now as a result we are fighting World War II.

You strongly advocate fire protection in order to win the war, and I heartily subscribe to the reasons you give. All of them were recognized long before the United States became directly involved. But I would add the vital necessity for protecting our forests against fire so that they may be kept productive, and this because of the need we shall have for them after the war. The war and post-war aspects of the fire problem cannot be separated.

Furthermore, I am unable to differentiate between destruction by fire and destruction by cutting. Both are bad and the end results of both are the same. It seems to me that everything points to the need for keeping our forests productive to help solve our post-war problems.

In order to meet war needs for such products as lumber, we are already curtailing non-war needs to those which are most urgent. The same situation is or will probably soon be equally true for many other forest products. Non-war needs are piling up. After the war, unless I am badly mistaken, we shall be hard put to it over a long period to meet these accumulated needs.

The same situation will hold in even more aggravated form for Europe; vast destruction over enormous areas, coupled with badly overcut forests which at best were unable to supply demands. It will be to our own great advantage as well as that of the impoverished nations in Europe if productive American forests can contribute to post-war reconstruction. My fear is that we shall not have enough forests left to do what would be in our great mutual interest. Our contributions would be the beginning of one means to a better and lasting peace—a peace based on the availability of natural resources in abundance to meet human needs.

For another thing, I can't see how we can longer ignore social problems which were critical before the war and will be again after it. One outstanding example is the vast rural problem areas in cut-over and depleted forest regions to the solution of which productive forests must make a very large contribution. Our estimates indicate that nearly one-fourth of the land area of the United States falls in this category. I am more and more convinced that the restoration of our forest offers the one best means available for social rehabilitation in these areas. Another example is the need for providing increased opportunity for employment after the war to which forests can and should contribute to the maximum possible extent. Certainly we don't want to slip back into the tragic unemployment of the pre-war years.

If this war is to lead to freedom from want for the common man here at home and in other countries, I do not see how we can postpone until the war is over the consideration of how that freedom is to be obtained, and the part in it that must be borne by natural resources, even though some controversial issues may be involved.

Although we must meet war needs, I feel sure that we must stop the needless destruction of our resources, because I am convinced that we shall need all of them, including the forests, in the greatest abundance we can produce to insure freedom from want and hence a lasting peace.

The contribution of productive forests to such freedom and to such peace are a part of a whole so vastly important to the United States and to the world that the Forest Service feels it must, if need be, face opposition on measures necessary to assure the contribution.

I only wish that the private owners concerned, and their sympathizers and supporters, could weigh objectively the little that is being asked of them, and that partly for their own benefit, against the inconceivably larger national and world benefits at stake.

Fourth you ask that our leadership be concentrated on the three things already mentioned, and primarily on fire protection.

This would limit our leadership to measures that everyone is for. Even the most reactionary forest owners, those who destroy their forests in utter disregard of the public interest and their own long-time interest, are almost universally for all three. After 50 years of discussion, educational effort, demonstration, etc., practically all private owners have finally accepted fire protection. And having done so they commonly regard it as a panacea, when for such an undertaking as forestry there is no panacea. For many reasons they favor forest products research and efforts to meet war requirements.

I wonder if leadership by responsible public agencies in any important field confined to what the most conservative will actually subscribe to is what the American public in general wants. I wonder if the public would stand for leadership of this sort for very long. In fact, I wonder if it really deserves the name of leadership.

What I think the American public expects from its public servants is that their leadership be characterized by vision, daring, courage to face the issues needed in the public interest even though some of them may be controversial, and the energy and drive to carry through forward-looking programs.

My judgment, in short, is that real public leadership in an important field should actually lead rather than trail public opinion. I can't believe that forestry, even during a world war, is an exception.

Possibly just a word is called for on the advisability of postponing the consideration of public regulation until "normal conditions of American life are reestablished" after the war.

One question is whether we want to see former so-called "normal conditions" reestablished. They contained so many social and economic maladjustments that I think we ought to be looking forward to something far better. Otherwise the sacrifices of the war will not bring the benefits which they should. Isn't there a real doubt anyway whether pre-war "normal conditions" will ever be reestablished? What we have to look forward to and to prepare for as best we can, will almost certainly be changed conditions. A part of our job is to see, so far as we can, that the changes are for the better.

Another question is that whenever public regulation has been advocated in the past, one of the efforts to defeat it has been to postpone its consideration or adoption. Sometimes one reason has been given for this and sometimes another. I have no doubt that if consideration were postponed until after the war, reasons would then be advanced for further postponement. In brief, whenever the matter of public regulation is raised we shall have to face the postponement argument.

Your letter is, I take it, in essence an appeal to the President to issue instructions to the Department, and more especially to the Forest Service, to discontinue some of the things which they are doing, and to place much greater emphasis on others. That is one of the privileges of the democracy in which

we are still privileged to live and one which I would not want to see abridged in the slightest degree.

But the fact that you have done this impels me to raise questions which I should otherwise have hesitated doing.

Can your Association hope to maintain public confidence and retain standing as representing an important sector of the conservation-minded American public, if the Association concentrates its primary efforts on such innocuous measures as fire protection, and on attempts to force public agencies like the Forest Service to follow suit?

Or to put it even more bluntly, can the Association hope to retain public confidence if it opposes the public agencies trying to stop forest destruction, rather than the private agencies responsible for it?

I ask these questions also because I believe that American forestry needs now as much as at any previous time in our history a strong association with the means and the will to fight for those measures, even though controversial, which are needed to safeguard and promote the public interest in the broadest and most inclusive sense.

Very sincerely yours,

EARLE H. CLAPP,
Acting Chief, Forest Service.

August 31, 1942.

Honorable Claude R. Wickard
The Secretary of Agriculture
Washington, D. C.

My dear Mr. Secretary:

As President of The American Forestry Association, I am in receipt of a letter from Mr. Earle H. Clapp, Acting Chief of the Forest Service, replying for you to my letter of March 20, transmitting copy of a resolution passed by the Directors of this Association on March 19th last. Copies of Mr. Clapp's letter have been sent each of my fifteen Directors, and I now have before me their replies.

We are deeply mindful, Mr. Secretary, that the war has placed heavy duties upon you, and we have no wish to burden you with further correspondence. In his reply, however, Mr. Clapp has drawn conclusions as respects the purpose and intent of our resolution that are not warranted with the result that a reading of his letter, copies of which I am informed have been publicly distributed by the Forest Service, does not correctly reflect the position of this Association. We feel, therefore, that in justice to the Association we have an obligation to clear up any misunderstanding that may be in your or Mr. Clapp's minds or in the minds of those to whom his letter has been sent for reading.

First, let me make clear that our resolution, passed shortly after Pearl Harbor, was directed solely to the national emergency precipitated by that event. Its purpose was to bring into sharp relief forest activities clearly vital to the war effort and to awaken the public to a recognition of them. Specifically it mentioned: (1) protection of our forest resources and war industries against the hazards of forest fires; (2) uninterrupted production of wood as needed to win the war, and (3) extension of forest research to help overcome shortages of other war needed material and to broaden the service of our forests in the nation's defense.

So far as I know, the first importance of these activities as war emergency measures in the forest field have never been questioned. They form, as you yourself know, the backbone of the war program of the Forest Service. We had hoped that our action would help the Service by bringing to its support public and official recognition of the immediate urgency of these measures as essential parts of the war program.

To our very great regret, Mr. Clapp in his reply to me has placed an entirely different interpretation upon our action. His letter represents it as (1) criticism of the Forest Service; (2) an effort to dictate the activities of the Service; (3) condonement if not advocacy of forest destruction in meeting war demands for wood; (4) disregard of post-war need for forests; (5) abandonment of long-standing Association policies and principles, and finally, it would appear, as an attempt to use the war to block public regulation of owners of forest lands.

I wish to place on the record of your office and on that of the Forest Service that these conclusions are in error. Our action, as already stated, was singled to the war emergency. By intent or otherwise, it neither changed nor challenged forest policies now in effect. Its one purpose in brief was to promote and further the putting of first things first on the forestry war front. The President has asked all individuals and groups to do this in their respective fields.

Mr. Clapp appears to have taken deep umbrage that in furtherance thereof our resolution called for united action and to that end appealed for the setting aside for the time being of unsettled controversies in the forest field, particularly that relating to public regulation. I have a feeling that Mr. Clapp's misinterpretation of our resolution stems from a resentment of that proposal. In the interest of common understanding, I therefore desire to elaborate briefly on that point.

On more than one occasion and as recently as September 22, 1941, this Association has declared itself for public control of timber harvesting by private owners as an essential measure of assuring perpetuation of our forests and of full utilization of our forest lands. As to methods of establishing such controls, we believe they should be effectuated through the states with the cooperation of the federal government, the state forestry departments and the forest owners concerned. Mr. Clapp, on the other hand, is known to stand for direct federal regulation. The question admittedly is open to debate, but at this critical time with enemies pressing at our every gate, we believe that the question ought temporarily to be laid aside for the following reasons:

(1) Immediate settlement of the question, in our judgment, does not constitute a war emergency. War demands upon our forests, heavy though they are, are not yet in excess of those of the last war or of many peacetime years that followed. Present annual drain upon our standing timber is only about two per cent of the supply.

(2) An attempt to set up a public control program at this time, either by federal or state governments, over the hundreds of thousands of farm woodlots and larger timber properties, would be of dubious success because of the shortage of manpower, both scientific and manual with which to effectuate it. Furthermore, any attempt now along that line, we think, would not only contribute to disunity but would be a non-emergency drain upon manpower desperately needed elsewhere to repel and defeat our enemies.

(3) Thirty years' discussion of the question has brought it to a controversial stage that increasingly is engendering bitterness, distrust and distraction of effort throughout the forest field. Regardless of viewpoints, Mr. Secretary, that is not a good "win-the-war" situation in any sector of our fighting front.

It is unnecessary for me to go into the many questions expounded by Mr. Clapp. We appreciate his extended discussion of them, and we concur in their importance and implications from the standpoint of economic and social welfare. We are quite familiar with them because throughout its existence of more than sixty-five years, and even before the Forest Service was created, we have been studying them and steadfastly promoting the application of forestry methods to the management of forest lands,—always in the interests of public welfare.

Mr. Clapp implies that this Association is lacking in support of public agencies trying to stop forest destruction. This, it seems to us, is tantamount to saying that because it does not agree with him as to method of effecting forest control, it is for forest destruction. That, we submit, is an untenable position and one which places not only this Association but all who disagree with the method proposed by the Forest Service in a false position. As a matter of fact, this Association has supported the Forest Service and helped to establish most of its

(*Continuing on page* 476)

MOCKERNUT HICKORY

***Carya tomentosa*, K. Koch**

BY G. H. COLLINGWOOD

MOCKERNUT HICKORY with its coarse leaves and twigs grows from Central New England across southern Ontario to southeastern Nebraska and all the eastern states from east Texas to Maine. It is found on dry slopes and ridges, but attains best development on rich uplands and deep fertile soil in the lower Ohio basin and in Missouri and Arkansas. Mockernut is the most abundant of the hickories in the South and is the only one found in the southern coastal pine-belt.

Courtesy, The Macmillan Co., from "Trees in Winter"

In winter the large, stout twigs, the ascending upper branches and drooping lower ones are characteristic

Attaining maturity at 250 to 300 years, mockernut hickory sometimes reaches a height of ninety or a hundred feet with a trunk three feet in diameter, but is usually much smaller, with upright rigid upper branches and gracefully pendulous lower ones.

The fragrant leaves, eight to twelve inches long, have flattened, grooved hairy stems and occur alternately on the twigs. Each leaf is composed of five to nine toothed leaflets which taper to the base. The upper leaflets, five to eight inches long and three to five inches wide, are two or three times the size of the lowest pair. The leaves are shiny dark yellow-green above, pale green and more or less finely hairy beneath, with a stout softly-hairy midrib below. They turn yellow in autumn.

The dark reddish brown hairy winter buds at the ends of the twigs are broadly egg-shaped and nearly three-quarters of an inch long. The side buds are similar in shape and color but are only one-half or one-third as large. The stout angular twigs are brown with conspicuous lenticels, and thickly covered with pale hairs in the first year, but become nearly smooth and dark gray in the second year. The wooly hairiness of leaf under surfaces, twigs and buds is recognized in the specific name *tomentosa*.

The flowers appear in May when the leaves are half grown. The long stalked slender, green, hairy staminate catkins are at the base of the new growth and the pistillate ones, in two to five crowded spikes, are narrowly bell-shaped.

The nearly round reddish brown nut is smooth, slightly flattened, usually four-ridged with a pointed tip and a slightly rounded base. It is enclosed in a thick, red-brown husk which is one and a half to two inches long and readily splits nearly to the base. The name mockernut hickory is given this tree because the sweet kernel is small and difficult to extract.

L. W. Brownell

The strong, rigid branches and dull green coarse foliage form a wide, irregular rounded crown

Never scaly, the dark gray bark of the mockernut hickory is about one-half to three-quarters of an inch thick and furrowed into flat ridges.

The close-grained wood is heavy, a cubic foot weighing over fifty-one pounds when dry. The brown heartwood is surrounded by nearly white sapwood which is often three inches wide. The strength, hardness, toughness, and flexibility of hickory has made it the foremost wood for shock resisting handles of such

The hairy terminal buds are a half to three-quarters of an inch long, while the lateral buds, though similar in color and shape, are much smaller

The dark, shiny leaves turn clear or rusty yellow in autumn, and the smooth reddish brown nut is enclosed in a thick, usually hairy red-brown husk

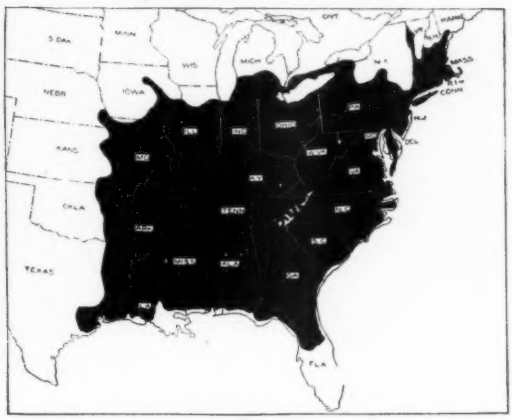
tools as axes. Nearly three-fourths of all hickory lumber goes for this purpose. It is also used for vehicle parts and furniture, and makes an excellent fuelwood.

Mockernut hickory in company with three other commercial hickories comprises a stand of some 16,000,000,000 board feet, which together produced 37,759,000 board feet of lumber in 1939. More than half the production was from West Virginia, Mississippi, Kentucky, Arkansas, Ohio, and Tennessee. It is subject to injury by frost and fires, but young hickory is persistent and will come up in spite of repeated burning and cutting.

G. B. Sudworth

The hard, irregularly furrowed bark is broken into broad, close ridges

The flowers appear in May, and the pollen-bearing ones shown here are hairy catkins borne in stalked clusters, while the seed-producing ones are in crowded spikes



Natural range of Mockernut Hickory

YOUR SHADE TREES:

By P. P. PIRONE

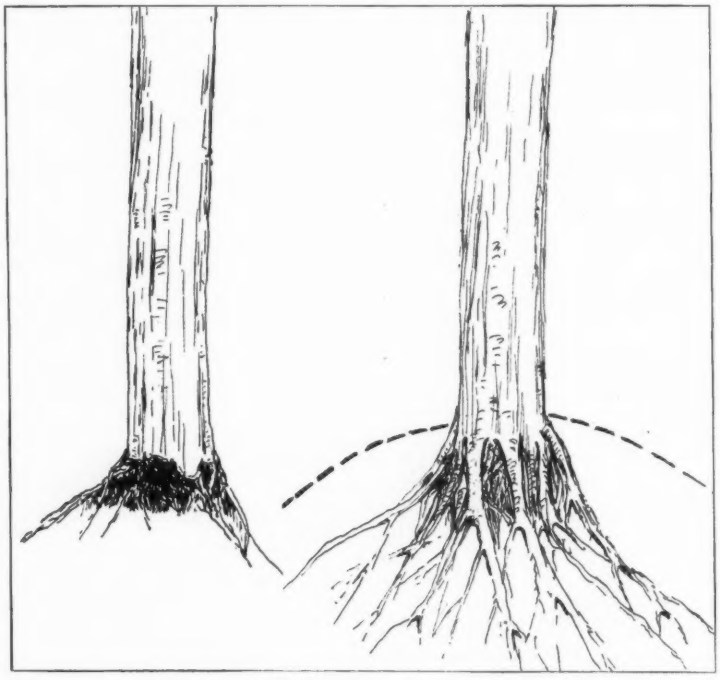
TREATING ROOT DISEASES

OF ALL the diseases with which the arborist or tree owner has to contend, none is more difficult to control than those causing root rot. The methods heretofore most commonly recommended include the following treatments, alone or in combination: surgical, which involves the cutting away of diseased tissue followed by the application of a wound dressing; aeration, which is effected by removal of soil from the base of the trunk and around the larger roots, thus permitting the affected parts to dry out and consequently checking the progress of the fungus; chemical, which is aimed at eradicating the fungus, and isolation of the infected tree or infested soil, which is accomplished by digging trenches of suitable size around the tree.

None of these methods has proved to be entirely successful, although surgical treatments and aeration when used in combination have in some instances retarded the advance of the fungus on individual trees, and under favorable soil and moisture conditions chemical treatments, especially those involving the application of carbon bisulfide to the soil, have helped to eradicate root-rotting fungi.

A promising, though little-known treatment, for adding many years of productivity and beauty to trees affected by root rot was described by Plant Pathologist Arthur S. Rhoads in a recent issue of *Phytopathology*. The treatment merely involves banking soil around the bases of affected trees to stimulate root development above the diseased areas. Despite the fact that it seems to be contrary to the aeration treatment previously recommended, the method seems to merit a place in the field of tree disease control.

The soil banking treatment recommended by Mr. Rhoads is an outgrowth of his observations that many trees—especially citrus—develop adventitious roots when soil is placed around the trunk above the normal ground level. He felt that this natural tendency of trees could be utilized in cases where the life of the tree was threatened by root disease. Mr. Rhoads' observations check with those made by practicing arborists who have had occasion to dig out trees where grade changes have been made. In such cases, it has been found that trees subjected to increases in grade tend to produce a new set of roots above the old one, if they survive the drastic changes that result from the addition of a blanket of soil over the original level. Moreover, the author has seen profuse root development in gardenias previously girdled at the soil level by the gardenia canker fungus, when a mound of soil covered the girdled area.



This diagrammatic sketch shows how soil banking stimulates new root formation above diseased areas. At the left—the base of the tree, severely affected by Clitocybe root rot, has three healthy lateral roots. At the right, the new root system of Australian pine formed four and a half years after surgical treatment and soil banking. The broken line indicates the height of the soil mound. (Right diagram drawn from Rhoads' photograph)

Old citrus trees nearly dead from basal girdling by root rot disease (*Phytophthora parasitica*) were successfully rejuvenated by a Florida grower as early as 1926, Mr. Rhoads reports. This experiment was begun on a number of old, half-dead seedling orange and grapefruit trees in 1920 and later extended to other trees. In the first tests, a rough framework was built around the base of each tree to hold the soil and two wagonloads of clay were put in, covering the trunk base to a height of fifteen to eighteen inches. Sand has been substituted for the clay in some parts of Florida but it has been found to be less retentive of moisture and more subject to washing away. "In from two to five years, a more or less profuse growth of new roots developed from the margin of the callus formed above the bases of the partly girdled trunks," Mr. Rhoads reports.

Good-sized roots were found bridging basal lesions where the wood had become extensively decayed. Following the establishment of the new root systems, the trees no longer exhibited the sparse, yellow tops characteristic of trees affected by root rot, but showed healthy tops with good fruit production. Trees that were treated by soil banking in this particular experiment still continue to thrive.

Mr. Rhoads also found the soil banking treatment effective in saving Australian pines (*Casuarina* spp.) attacked by Clitocybe root rot. So insidious is this disease, that many Australian pines are extensively girdled before any striking symptoms are visible in the tops. The following is a detailed report of the treatment of one Australian pine in his own yard. In December, 1932, all of the roots of this tree with the exception of three small lateral ones of finger-size on one side of the trunk were dead and invaded by the root rot fungus. He cut and removed all but these three lateral roots, as well as the base of the tree with the divisions of the taproot and the basal bark, where the fungus had completely girdled the tree. He then cut out all diseased bark down to the wood and painted the exposed wood surface with a mixture of roofing paint and carbolineum. Despite propping to hold it in position, the tree was blown to the ground the day following the surgical treatment and had to be guyed in position with wire. Mr. Rhoads then built a well of concrete blocks about a yard square around the trunk, filled it with sandy soil, and watered the area thoroughly.

By the middle of 1934 new roots had developed so effectively that the tree was as firmly anchored as it was originally, and the well of blocks was removed.

Three years later the same tree again showed above-ground symptoms of root rot. Removal of the sand showed that the trunk base was two-thirds girdled by the rot. The tree was again treated by cutting away more than half of the new root system and all diseased bark on the trunk base. The exposed wood was painted, two pounds of hydrated lime was scattered around the base, and sand was once more banked around it.

"The tree soon regained its healthy appearance," Mr. Rhoads writes, "and has continued to remain healthy . . . .

"When the bank of sand was washed away in June, 1941, to permit examination, a new growth of healthy roots, developed from the callus formed above where the bark was cut away on the trunk, was found to have filled the gap left by removing the diseased roots approximately three years previously.

"Thus by the simple expedient of banking, following surgical treatment, it has been possible to restore this apparently doomed tree to its former health and to continue to maintain it for a period of more than nine years, despite reinfection by Clitocybe root rot."

Mr. Rhoads concludes that the rejuvenation by banking of attacked trees following surgical treatment is by no means limited to citrus trees and Australian pines. He and growers whom he has had occasion to advise, have tried the soil banking treatment on a variety of trees, both large and small, and also on shrubs attacked by Clitocybe root rot. From the results obtained, the method appears to be applicable to any woody plant that readily develops adventitious shoots.

Because so much has been written on the damage to trees from soil fills, perhaps it would be well to point out that the banking method described in this article will not damage the important nutrient-absorbing roots. Such roots extend sufficiently beyond the trunk base, where the soil is applied, to preclude the possibility of harm. The soil mound around the trunk should not be more than two to three feet in diameter, and in large trees for which this treatment is suggested, few to no important feeding roots are present beneath this area.

THE QUERY CORNER

QUESTION: My elms are bleeding profusely, producing a white slimy flow of sap. What can I do for them?—R. H., Connecticut.

ANSWER: The slime flux from which these elms are suffering is little understood, and with our present knowledge is subject to relief rather than actual cure. On the assumption that it is due to an excess of sap pressure in the heartwood, encouraging results have been achieved by tapping the tree near the base. This is best done by boring an inch and a half hole into the center. If it reaches the right spot, the sap will ooze out, or actually spurt forth, followed by an indefinite period of dripping. To avoid subsequent damage, and unsightliness from the constant flow of sap over the bark, insert a metal pipe about one-half inch in diameter and of sufficient length to carry the sap well away from the trunk. The exposed flow of sap will probably become infected with bacteria with resulting repetition of the slime. Eventually, the sap flow may cease, but until then the white slimy flow will continue.

QUESTION: Can you give me some information with regard to the treatment of a tree which is practically ruined every year by Japanese beetles? I do not know the exact species but have been told it is a Japanese plum tree. The leaves are small and red in color and it bears a rather small, bitter plum. I would like to spray it.—Richard P. Kelly, Lansdowne, Pa.

ANSWER: There are a number of sprays known to be effective in the control of this pest. One of the most commonly used formulae consists of 3 pounds of ordinary lead arsenate and 2 pounds of wheat flour in 50 gallons of water. This spray acts more as a repellent and does not actually kill all the beetles. A non-poisonous spray made up of 2 pounds of rosin residue emulsion and 2 pounds of derris powder in 50 gallons of water also affords considerable protection. There are a number of satisfactory rotenoid sprays on the market which merely require dilution with water. These are sold under trade names of Japellent, Japex, and Japrocide, and there is still another type sold under the trade name of D-X.

Best control of the Japanese beetle is obtained when the spray is applied just before the beetles appear, and repeated within two weeks after they begin to feed.

QUESTION: A number of the branches on our ash tree have died, and on the trunk there are many small gimlet-like holes, evidently bored by some sort of insect.

Close to the ash tree is a fine specimen of linden, which we fear may become infected by the borers from the ash tree.

Can you advise me from this brief description what type of borer has attacked the ash and what treatment do you advise?—Ex Norton, Hopkinsville, Kentucky.

ANSWER: Two species of borers commonly attack ash—the lilac borer, a brown-headed, white-bodied larvae, three-fourths of an inch long, and the carpenter worm, a three-inch, pinkish-white caterpillar. As far as I know neither of these pests attack lindens commonly, this tree being subject to the linden borer which is white, slender, and almost an inch long.

If the linden is kept in good vigor by watering and fertilizing there is little chance that it will be attacked by any borer.

Control of the borer in ash will be governed largely by the seriousness of the infestation. A mild infestation can be controlled by inserting a flexible wire into the galleries and crushing the borers, or by injecting nicotine paste into the tunnels and then sealing the opening.

BALDY OF THE ALEUTIANS

(*Continued from page* 447)

eagles, completely inhospitable, mildly alarmed, mildly angry, backing away to the far edge of the nest with loud beak snapping, angry grunts and much guttural croaking. But like young eagles everywhere, in a few minutes they grew accustomed to us, their resentment died away and they quieted down, watching us with no great show of interest while we worked with the cameras.

The nest itself was a flat and rather slovenly platform, hardly hollowed at all in the center and far more carelessly built than the tree-cradled nests of Old Baldy in forested country. It was made of dry grass, dead seaweed from the beach, the dry stalks of a coarse wild celery known to the Aleuts as *pootchkie,* and other debris. A few seafowl feathers scattered in the nest hinted that the eagles of the Aleutians do not confine themselves to a fish diet. As a matter of fact, in view of the incredible abundance of seabirds in the great nesting colonies of those islands, it is logical to assume the eaglets dine on fowl more often than on fish.

We spent an hour or more at the nest, finally entering it and kneeling down beside the fledglings. They submitted to stroking without making much fuss and when we parted it was on excellent terms. Unfortunately we carried with us no leg bands. We would have given much to have fitted numbered metal anklets above the yellow feet of those young princelings of the sky, in the hope that some day we might have heard from them again, perhaps with word of their wanderings above the fog-shrouded islands, or their span of life or other interesting facts concerning them.

While we remained at the nest the old eagles kept the traditions of their kind, hanging in the cloudy sky a full thousand feet overhead, turning in wide circles, voicing their uneasiness and anger in shrill screams, but never once threatening us with a near approach, much less an attack. The truth is that Sky King is hardly valiant in defense of his aerie. Were his courage in proportion to the wide sweep of his wings and the power of his mailed fists, the most ardent bird man or camera hunter would think twice before he climbed to the castle gate.

We quitted the nest finally, making our way down the steep side of the hummock between the clumps of grass. When we were a half mile down the beach we stopped to watch and presently one of the parent birds, probably the hen eagle, came gliding down the invisible stairway of the wind and alighted at the aerie. It was easy to imagine her relief at finding her family so little molested.

Eagle nests built on the ground were a fairly common sight in the Aleutians after that. Without exception those we saw were placed in a similar location, atop a grassy hummock or rocky hill along the beach, where the birds had as much isolation and protection from natural foes as was possible in that treeless land.

Of all the eagle families we visited the one that interested us most was on Amchitka Island in the eastern hemisphere, after we had crossed the hundred eightieth meridian of longitude on our way west. This nest was built on a low, rounded hill, carpeted with coarse grass, in the center of a kelp-grown flat that was uncovered at low tide. No difficult climb was involved. We had only to walk up the side of the hill forty or fifty feet. Standing there beside the flat nest, I contrasted the site mentally with the wind-swayed upper branches of towering pine and maple and hemlock where I had paid my respects to other eagle families in times past. Sky King's ways are certainly humble there in the Aleutians.

The two eaglets were nearly big enough for flight and they met us with a lively show of anger, hissing and croaking and backing off. The view from their aerie was worth going a long way to see. It took in the bare tide flat, the brown beds of wet kelp, the rolling green hills of Amchitka, the darker band of rye grass above the black sand beach, the broken line of silver where the groundswell pounded on the reefs, and beyond that the grey and empty reaches of Bering Sea. There was something incredible about seeing the fledgling eagles hunched down on their dry-grass platform in that alien setting. There they were, native Americans of the first rank, strangely out of place on that unpeopled, windswept island in the eastern hemisphere. Less than five hundred miles away, across the stormy sea to the west, lay the Kommandorski Islands of Russia. Less than a thousand miles to the west and south the first of the rocky Kuriles of Japan lifted into the fog. This was the eastern world. It seemed incongruous that bald eagles should be the overlords of these islands.

We were certainly the first men this pair had seen. They huddled down in the nest and grunted their distrust of us with angry vehemence. Then they forgot to be afraid, and grew quiet.

I would give much to know above what wild and lonely stretch of beach in the Aleutians that pair soars today, and what sights they have seen since we left them in their aerie that June evening more than

(*Continuing on page* 480)

TREES AND THEIR USES—No. 69—MOCKERNUT HICKORY

MOCKERNUT HICKORY IS FOUND THROUGHOUT THE EASTERN HALF OF THE COUNTRY FROM MAINE TO FLORIDA AND WEST TO NEBRASKA, KANSAS AND OKLAHOMA
THE NAME "MOCKERNUT" IS DERIVED FROM THE FACT THAT THE SMALL, SWEET KERNEL OF THE NUT IS EXTREMELY HARD TO GET AT
THE NUT ITSELF IS ENCLOSED IN A THICK, REDDISH-BROWN HUSK, ONE AND A HALF TO TWO INCHES LONG, WHICH SPLITS READILY NEARLY TO THE BASE
THIS HICKORY SOMETIMES REACHES A HEIGHT OF 100 FEET WITH A TRUNK DIAMETER OF THREE FEET, BUT USUALLY THE TREE IS SMALLER
THE LEAVES OF MOCKERNUT HICKORY ARE LARGE, STRONG-SCENTED AND HAIRY AND HAVE 7 TO 9 OBLONG, POINTED LEAFLETS WHICH TURN A BEAUTIFUL YELLOW IN THE FALL
MOCKERNUT HICKORY IS HARD, TOUGH AND FLEXIBLE AND HAS A WIDE USAGE FOR HANDLES OF SUCH TOOLS AS AXES. OTHER USES INCLUDE VEHICLE PARTS AND FURNITURE. HICKORY WOOD ALSO PROVIDES THE BEST OF FUEL
MOCKERNUT AND THE OTHER HICKORIES ARE VERY DESIRABLE BOTH FOR FOREST AND SHADE TREES FROST AND FIRES ARE ITS CHIEF ENEMIES.
-FADER-

Article of the Month

BIRDS AND FLOATING OIL

By ROGER T. PETERSON

Each month AMERICAN FORESTS presents as a special feature an article which has appeared elsewhere and which, in the judgment of the editors, is of outstanding interest from the standpoint of the information is contains. BIRDS AND FLOATING OIL, by Roger T. Peterson, well known writer, artist and conservationist, has been selected for October because it portrays a vivid and accurate account of the tragic losses suffered by sea birds as a result of floating oil from torpedoed tankers and other sources. Mr. Peterson's article is condensed and reprinted from "Audubon Magazine" for August.

A TORPEDOED tanker going down, a submarine mortally blasted by a depth charge, or a ship simply discharging its ballast water forms a great oily slick on the choppy surface of the sea. The waters are quieted, and the glistening patch, spreading for acres, must seem to a sea bird, a pleasant respite from the ceaselessly moving waves. Instead of an oasis of rest, it proves to be a place of death.

A winter sea duck, plowing feet first into it from the air, or bobbing up from a sub-surface exploration is enveloped in a black mess, almost as if it had been dipped in a tar barrel. Glued together by a sticky dark film, or, in the case of ballast water, a vile emulsion of oil, sea water and bubbles, feathers are no longer a protection against the cold waves. Chilled to the marrow, the bird's only desire is to get out of the icy water as soon as possible, to get to the beach. If its wings are oiled, it cannot shorten the agony by flying; it must swim.

No amount of preening will remove the sticky substance, for salt water only coagulates it. Most oiled sea birds die a lingering death, but if the weather is extremely cold, chills and pneumonia hasten the end. Often a bird with only a small spot of oil on its body will succumb to pneumonia or some similar pulmonary ailment.

Ever since crude oil has been carried on ships, unknown thousands of pelagic birds have perished every year on the waters of the seven seas. Many of these avian catastrophes have gone unrecorded, where strong ocean currents have borne the bodies far from any shore where they could be observed. At places like Montauk, Monomoy or Hatteras, where hardly a week passes without a visit by bird students, oiled birds are found nearly every winter, usually just a few, but occasionally the drift along the tide line is studded with carcasses.

When a ship, off its course, breaks up on the rocks, there is not much that can be done about the oil that blankets the surrounding sea. In emergencies, tankers have been forced to pump their cargo of oil overside in order to float free from a hidden reef. These things cannot be helped, but the old routine of discharging oil-contaminated ballast water from ships plying up and down the coasts is something that can be controlled.

On oil-burning vessels there are tanks of equal size on both sides to keep the ship balanced. When most of the fuel oil in a tank is used, sea water is pumped into the nearly empty tank to maintain the equilibrium, then shortly before reaching port at the end of the trip, this ballast water used to be pumped back into the sea along with waste oil from the bottoms and sides of the tanks. This residue sometimes amounts to as much as twenty barrels. Boats in this country now discharge their ballast water through separators at the refinery before reloading.

To discharge oil into the harbors of the United States or on the sea within three miles of land was forbidden by law in 1924. Similar measures have been taken in other countries. Since oil will float long distances, it is hoped by many that oil separators will some day be legally required on all oil-burning ships.

The oceans wash the shores of all the continents so the problem is international. In 1926, a conference of thirteen nations was held in Washington where it was proposed that they should agree to prohibit the discharge of oil within fifty miles of their shores. This plan was later ratified by all nations but three—Germany, Italy and Japan—so the treaty never went into effect.

As late as 1935 and 1936, new attempts were made through the League of Nations to work toward some global agreement, but by then world politics had become so tangled, diplomacy so bogged down, that it was hopeless.

When the conflict in Europe was still but a few months old, a young Dutch ornithologist, en route to the Indies, told me that the beaches along the North Sea were a dismal sight, with dead sea birds lying in windrows, coated with oil from sunken ships. In war, that is to be expected. Oily water, discharged from a home-bound ship is as nothing compared to a full-laden vessel destroyed by a mine. Often, a torpedo exploding within the hull of a tanker would ignite the escaping oil and seamen going overside would perish in a sheet of fire. If this did not happen, the black oil would collect in the bays for miles up and down the coast.

When the United States entered the war on December 8, 1941, it was to be expected that the same thing would happen here. Submarines would operate off our shores, and the extent of their activities would be reflected in the dead seafowl along our beaches.

One week-end early in February of 1942, Guy Emerson and I covered the whole south shore of Long Island from New York City to Montauk, and except for one male scaup with a stained belly, we did not see a sign of oil pollution. It was not until late February that the expected began to happen. Ludlow Griscom wrote from Massachusetts: "Just last Sunday I discovered the greatest disaster of oiled birds at Monomoy. We es-

timated that twenty-five per cent out of approximately 20,000 wintering birds were more or less badly affected. The sight was pathetic and extraordinary and was immeasurably worse than anything previously recorded in the waters of the State."

Soon other reports came in. Most of the damage seemed to be in the Northeast. Harrison Lewis, chief federal migratory bird officer of Canada, reported that in the maritime provinces there was large scale destruction of sea birds in three places—about the Grand Manan Archipelago, New Brunswick, the vicinity of Cape Sable, in extreme southwestern Nova Scotia, and in the vicinity of Halifax, Nova Scotia.

At Cape Sable, between 1,000 and 1,500 eider ducks were destroyed, as well as 200 old-squaws and 100 scaup. The local lightkeeper estimated that of the birds found in the vicinity at the time, ninety per cent of the eider ducks, ninety per cent of the golden-eyes and seventy-five per cent of the old-squaws perished.

About Grand Manan the mortality was estimated at 3,000 eiders, 2,000 mergansers, 1,500 old-squaws, 5,000 murres and dovekies, 1,500 black guillemots and 500 golden-eyes, a total of at least 13,500 birds.

Albert Stadlmeir wrote from the Brigantine National Wildlife Refuge at Absecon, New Jersey: "I regret to report that during the past week oil came into parts of Barnegat Bay through Barnegat Inlet, and again oil came in through Little Egg Harbor Inlet below Beach Haven. Since this has happened we have lost hundreds of wild birds. Included are black ducks, scaup, golden-eyes, mergansers, loons, grebes and Canada geese. Now that the oil has penetrated into our inland waters, no doubt we shall receive many reports of losses to our wild birds, along the coastal area resulting from these tanker sinkings and coming as it does right at the height of our spring migration makes it all the more serious."

Harry A. Bailey, refuge manager of the Back Bay Refuge on the Virginia Coast, informed us: "Our greatest single loss of birds in the past few years occurred during the latter part of the week of February 15 of this year, when it was estimated 600 birds were observed on the sands of the beach, and were in a very weak condition from contact with oil. It was estimated that approximately ninety-five per cent of these birds were scoters, the remainder loons and grebes."

Sam A. Walker, writing from the Pea Island National Wildlife Refuge at Manteo, North Carolina, reported: "Recent conditions as to oil along the beach are the worst I have ever seen. It has been bad for about ten days. Yesterday it was still washing ashore and was thickest near Kitty Hawk. For several miles it was on the shore about one inch thick. On April 13, I covered the seashore from Oregon Inlet north for about nine miles, saw twenty-five common loons, four red-throated loons, six gannets, two scoters and fifteen horned grebes . . . all coated with oil. Most of the grebes were dead. On April 16, I was over this area again, and saw ninety-one common loons, four of them dead, one red-throated loon, one gannet and one American scoter."

South of North Carolina no one reported any great damage to the sea birds, nor did they along the Pacific Coast. Observers in California, Oregon and Washington noticed no more oiled sea birds than usual.

FIRST FOREST BOMBING

The first aerial attack on continental United States may have been an attempt to set fire to valuable Oregon timber. According to Army and Forest Service officials, an unidentified airplane was observed flying in the vicinity of Brookings, Oregon, on September 9, shortly before a Forest Service lookout reported a small fire on Mt. Emily, nine miles northeast of Brookings. A smokechaser dispatched to the scene extinguished the blaze and discovered a three-foot crater in which were found metal fragments and a number of small pellets of incendiary nature. These bomb fragments, the Army disclosed, bore Jap ideographs.

The plane, described by the Army as a small seaplane of the type which might be carried on a submarine, was sighted several hours before a United States warplane bombed a Jap undersea craft thirty miles off the Oregon coast. It was first observed flying inland from the sea about 6 A. M. The forest fire was discovered at 12:20 P. M., and extinguished shortly thereafter.

After April, reports of large scale damage to sea birds in the Northeast dropped off. The wintering flocks broke up, and the birds that had not come in contact with oil scattered to their summer nesting grounds in the North. Tanker sinkings continued, and report had it that the oil was three inches thick on some of the beaches, and bodies of men "wash ashore on the beaches often enough to shock swimmers" (*Time*). Although this was hotly denied by the publicity departments of the hard-pressed seaside resorts, there was undeniably a lot of oil on some beaches, and many gulls, terns and shore birds acquired black breasts and bellies. The mortality among these summer beach birds is not great because there is not much danger from chills.

No humane-minded person can see oiled birds along the beach without being saddened. Last spring people in the vicinity of Beach Haven, New Jersey, picked up many of the stranded birds, and washed them off with kerosene, soap and hot water, in an effort to save as many as they could. While this saved a few of the birds, most of them perished. This seems to be what happens in most cases where people try to remove the oil in one way or another. If birds are badly affected, it is kinder to put them out of their misery as quickly as possible. Where there is a chance of survival, the Royal Society for the Protection of Birds in London recommends the following treatment:

Rub salad oil gently into the feathers to loosen the damaging oil, but on no account use petrol or gasoline, as this sets up intense irritation of the bird's skin. Leave the salad oil on for two hours, then wash off with warm soap suds and water. Do not touch the head. To avoid being pecked, cover the head with a soft cloth or some very thin material. Do not permit the bird to return to the sea until it is absolutely dry and vigorous, and in the meantime, feed it raw herring, cut into strips, sprats or small smelts, or tiny pieces of raw beef.

Dillon Ripley, experimenting with oil-soaked birds, found gasoline disastrous. It only diluted the oil, so that the whole upper surface was covered with a thin film. The natural body oil was dissolved, and the bird became water-logged, had a chill and died. A strong commercial soap was tried which cleaned off some of the oil but again the bird's own oil was washed off along with it, and the bird became soaked and soon succumbed.

It is obviously quite a job to salvage even a single bird, and there is much experimentation to be done to find out the safest and most effective method. Pennington Sefton, a manufacturer of cosmetics, has suggested deodorized kerosene plus lanolin and carbitol which he believes might dissolve the crude oil and yet leave, on evaporation, enough oil to keep the feathers waterproof.

A number of observers have noticed that birds oiled at sea seem eager to reach small fresh water ponds on the shore. There they bathe and preen, and seem to get rid of some of the oil. This probably accounts for the phenomenal occurrence of red-throated loons last March and April on fresh water ponds in the Northeast. Seldom seen away from the salt water, these loons turned up on dozens of ponds, from New Jersey to Massachusetts. Some of them had oil on their breasts while others seemed to have got rid of it. It is too much to suppose that they realized the dissolving effect of fresh water upon oil. More likely they were prompted in their movements by their desire for comfort, for the shallow, sun-exposed water of a small pond is much warmer than the deep ocean.

This brings us again to Dillon Ripley's conclusion in his article "Oil on the Sea" in the March-April, 1942, issue of *Audubon Magazine:*

"It is my impression that once oiled, most birds are doomed. Only a light open winter can save them. If they live until the summer molt, they will probably be

safe. If they can find a fresh water pond, they may be able to preen off the oil. Where conditions warrant it, an effort might be made to save some of these helpless birds by transporting them to a fresh-water pond and supplying them with food—not grains, which sea ducks don't readily eat, but fish or meat scraps, and ground-up dog biscuit."

While the war lasts, it seems totally improbable that we can prevent oil pollution at sea. When, however, the conflict is over, not only should public opinion force strict enforcement of existing laws against pollution within the three-mile limit, but every effort should be made to gain international agreement to ban oil pollution on the high seas.

Forest Industries Council Organized at New York

MEETING in New York City on August 13, a group of forest products industries representatives organized the Forest Industries Council whose objective includes increasing forest productivity and improving standards of forest management on privately owned forest lands of the United States. After discussing forestry and conservation problems, the following resolution was adopted:

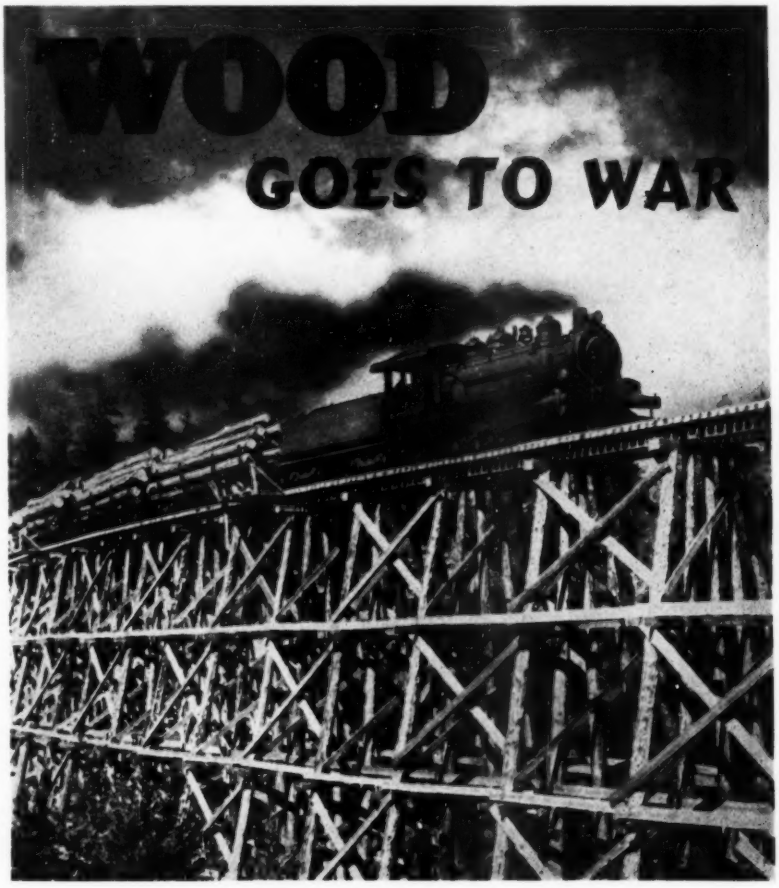
"Whereas, the forest industries of this country have a common interest in the increased productivity of forest lands and in improved standards of management of forest lands; and

"Whereas, the continued prosperity of those industries is dependent upon the efficient and sustained production of such lands; and

"Whereas, it is greatly to the interest of these industries and of the nation that these industries unite upon a program of effective action to increase such productivity and improve such standards of forest management;

"Now, therefore, be it Resolved, that a Forest Industries Council be established composed of representatives appointed by each national association and group representing industries and land owners interested in the production of forest products, which Council shall be charged with the responsibility of formulating a statement of policy and a program of action to promote increased productivity of forest lands and improved standards of private forest management.

"Resolved, that Mr. G. F. Jewett, Mr. E. W. Tinker and Mr. Ernest A. Sterling be and they hereby are authorized to communicate with the associations and groups referred to in the foregoing resolution to arrange for the appointment of the representatives constituting such Forest Industries Council and the calling of the organization meeting of said Council."



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A.F.A. BOARD NAMES ELECTIONS COMMITTEE

The following Committee on Elections has been named by the Board of Directors of The American Forestry Association, for the nomination of officers to serve the Association during 1943: J. P. Kinney of Washington, D. C., Department of the Interior, chairman, L. N. Ericksen, of the Forest Service, Washington, D. C., and Winslow Gooch, forester of the Chesapeake Corporation, West Point, Virginia.

The committee will nominate a slate, but according to the By-Laws of the Association, its members are entitled to make nominations independent of those made by the Committee for any or all offices to be filled. Such independent nominations must be signed by not less than twenty-five members of the Association in good standing and must reach the Committee on Elections at the headquarters of the Association, 919 Seventeenth St., Northwest, Washington, D. C., not later than November 1, 1942. The nominations of the Committee, together with any which may be made by the membership, will be offered for letter ballot vote to the members of the Association during the month of December.

Officers to be elected for 1943 include a president, twenty-one vice-presidents, a treasurer and five directors. All will serve terms of one year, with the exception of four of the directors. Three directors are to be elected for five years to fill the expiring terms of Samuel T. Dana, Dr. Charles E. Holzer and William P. Wharton. The director to be elected for two years will serve the unexpired term of Augustus S. Houghton, who wishes to retire at the close of the year, and the director to be elected for one year will serve out the unexpired term of Col. Joseph Hyde Pratt, who died last June.

ARMBANDS IN THE FOREST

(*Continued from page* 452)

friendly aliens are eligible for membership, subject to minimum age and physical requirements set up locally. Application blanks are available at Civilian Defense volunteer offices and may be turned in there or to forest protection agencies.

OCD has 10,000,000 volunteers, in every field from air raid warden and messenger to nurse's aide and "baby 'tenders" for children of working mothers. Director Landis says bluntly that it isn't a very good civilian army yet, because it isn't big enough. He wants many more volunteers to carry the battle on the home front in this all-out war. There are weak spots in the existing services, and there are going to be weak spots in the new corps, the Triple-FS. But some pretty big facts are beginning to stand out for civilian defense in general.

Perhaps never before have so many civilian Americans engaged in study of one kind or another. They are studying fire aid, nutrition, fire bombs, degassing, police procedure, airplane spotting, foreign languages, welding and woodwork, transportation problems, camouflage, and hundreds of other things. They are getting to know a lot of things that are useful to know, to them and to their country.

They are, in the best sense of the democratic process, becoming better informed in thousands of ways. They are learning what we are fighting for, and look forward to a better world of the Four Freedoms for themselves and their children. At the same time they are equipping themselves with new skills, new knowedge, and new horizons.

Not only in education, but in the practice of citizenship, people are more alive and aware than they have been in the past. The old town meeting type of citizenship is coming back. The citizen is finding that he pulls some weight in the home town, when he pulls with others toward a common end. He is finding out how things get done, and is helping to do them.

With the know-how gained from study and the know-how gained from the exercise of patriotic citizenship, a new kind of thing is forecast. The forest protective agencies hereafter, as an instance, had better be good. There are going to be a lot of people who know how to prevent and stop fires. If it isn't done right somebody with the know-how of democratic citizenship will see that it is done right.

The effect of those armbands on the forest front will be worth watching. If the bands cover as willing a lot of left biceps as those in the other volunteer services, some extremely interesting results will be forthcoming. The first aider has in many cases found use for first aid in ordinary life. An auxiliary policeman in Washington was responsible for the capture of a notorious criminal. The auxiliary fireman has had his taste of smoke. The Civil Air Patrol has scouted floods and forest fires, has rushed through serum to towns hit by tornadoes. The forest fire fighter will not have long to wait. Not only that, but if the recruiting is widely and wisely done, the forest protective agencies will have better coverage of their territory than ever before. The education of so many people is bound to spread the gospel of protection more effectively than in the past.

And it will be easier, after the war, to keep the smoke-eaters in harness.

CONSERVATION CALENDAR

Important Bills in Congress with Action—August 4-September 3, 1942

INDIAN AFFAIRS

S. 2749—LANGER—To authorize payments under the agricultural conservation programs with respect to operations carried out on lands within Indian reservations. Introduced September 3, 1942. Referred to the Committee on Indian Affairs.

NATIONAL FORESTS

S. 2728—MCNARY—To enlarge the Willamette National Forest. Introduced August 20, 1942. Referred to the Committee on Agriculture and Forestry.

WATER AND STREAM CONTROL

H. R. 7521—BEITER—Authorizing a preliminary examination and survey of the Allegheny, Clarion, and Susquehanna Rivers, New York and Pennsylvania, with a view to the control of floods. Introduced September 3, 1942. Referred to Committee on Flood Control.

CONSERVATION IN CONGRESS

FORESTRY and conservation legislation continues in the background as Congress goes to work on inflation control. Recent developments have lessened the chances of major forestry and conservation legislation this session.

Approval of regulations by the Secretary of the Interior on August 14 makes effective the provisions of Public Law 586 which gives authority to sell or lease certain pubic domain lands and their non-mineral resources "for use in connection with the manufacture of arms, ammunitions, and implements of war, or the production of equipment, supplies, and materials, or machinery usable in such manufacture." The Act, which expires six months after termination of the unlimited national emergency, was approved by President Roosevelt on June 5, 1942. The Secretary's regulation places administration of the Act in the General Land Office and limits the sale of lands to applicants whose needs cannot be met by a lease. Leases will be granted only to citizens and organizations who satisfy the Secretary that the land or resources applied for is urgently needed for the war effort.

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Public domain lands will probably be utilized under the Act principally for their yield of timber, sand, gravel and stone; and as factory sites, housing sites for war workers and as expansion areas for plants bordering the public domain. Provisions for acquisition of minerals are contained in mining and mineral-leasing laws.

Critical shortage of labor in the nonferrous metal mining, milling, smelting and refining, and logging and lumbering industries in twelve western and southwestern States has resulted in a directive by Chairman Paul V. McNutt of the War Manpower Commission prohibiting "pirating" of labor. Constituting the "critical labor area" are the States of Arizona, Colorado, Idaho, Montana, Utah, Wyoming, California, Nevada, Oregon, Washington, New Mexico, and Texas. Employees in "critical industries" may not change employment without permission from the United States Employment Service. Employers in the critical labor area are prohibited from hiring such employees without a certificate of separation which is only issued if the transfer is in the interests of the war effort.

Meanwhile, WPB Chairman Nelson ordered a forty-eight hour week in all Pacific Northwest "logging camps, and where logs are available, and mills." Under the Wage-Hour Law employees will be paid time and one-half for all hours over forty per week. Although lumber prices are fixed, OPA Administrator Leon Henderson recently approved a price premium for lumber employers who voluntarily extend their work week.

Representatives of forestry organizations met in New York on August 14 to make plans to forward legislation authorizing an increase of forest protection funds under the Clarke-McNary Act. A bill to this end, S. 2629, sponsored by the Association of State Foresters, was recently introduced in Congress by Senator McNary of Oregon. Its passage would have the effect of increasing the present authorization for cooperative forest fire control from $2,500,000 to $9,000,000 and of providing an additional $1,000,000 for cooperation with states and private owners in combating insects and diseases.

It was the sense of the meeting that in view of the increasing importance of fire control as an emergency war measure an effort should be made at this time to secure approval of the bill by Congress.

TREES THAT ARE THEIR BROTHERS' KEEPERS

(*Continued from page* 450)

Californian but a naturalized member of its tree population. Eucalyptus, brought here many years ago, found California so agreeable that it has flourished from San Diego to San Francisco. In fact, so abundant have these great, picturesque trees become that to many Californians they are a symbol of the state. Eucalyptus trees, with their graceful branches, silvery blue-green leaves and whitish, shaggy trunks, not only bestow beauty on a landscape, but many other virtues have been attributed to them, virtues that range from medicinal to metaphysical.

A genus of *Myrtaceae,* including about 150 species, the eucalyptus is native to Australia. Blue gum eucalyptus is the variety best suited to windbreak use. The ideal windbreak tree should grow vigorously and rapidly, be able to survive a variety of climatic conditions, and maintain a good mantle of foliage down to the ground in its later years. The blue gum fulfills all these requirements except the last, but that deficiency can be remedied.

Blue gums have the habit of dropping their lower branches when they reach a height of fifty feet or more. But if two adjacent rows of trees are planted and alternate trees cut out after about ten years, a heavy crop of sprouts will grow from the stumps and fill in nicely under the crowns of the big trees. This practice not only insures a good mantle of foliage to the ground, but the cut trees yield a fairly continuous supply of excellent firewood.

Monterey cypress has been used as an effective windbreak near the coast, but is no longer recommended because of its susceptibility to cypress canker, scale, and bark beetles. Arizona cypress has done well in some interior districts, but grows more slowly than eucalyptus and is somewhat susceptible to the same cypress diseases.

It is estimated that the most effective height for a windbreak is five to seven times the height of the trees to be protected. With blue gum eucalyptus trees sixty to sixty-five feet high, windbreak rows should be spaced every 300 to 400 feet. In most orchards a distance of 330

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2. **Maintenance of a continuous production of wood and other forest products essential to the prosecution of the war.**
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feet seems to be most convenient, because this, the distance across a five-acre block, gives room for fourteen rows of orchard trees between windbreak rows.

If a distance of fifteen feet on each side of the windbreak is assigned to eucalyptus trees, which is about the smallest area in which they can thrive, it means that slightly more than nine per cent of the area of a citrus property will be dedicated to windbreak trees. But this dedication of property and care is a good investment. With eighty trees an acre in wind-protected groves, the yield should be about 286 boxes of fruit an acre. In unprotected groves with ninety wind-damaged trees an acre, only forty-three boxes an acre may be expected.

An effective windbreak requires an investment of money and care. The guardian trees should have at least as good care as the orchard they protect. This includes irrigation, fertilization, cultivation, top pruning to prevent windfall during the first few years, and root pruning on alternate years to confine the roots within reasonable bounds. Using a liberal figure of $150 an acre a year as the cost for maintenance of citrus groves, the approximate acre in two windbreak rows needed to protect the average ten acres of orchard will cost $136 a year. This is a charge of approximately $15 a year on each of the nine acres producing oranges or lemons, probably somewhat less during the first five or six years, but will pay bigger and surer dividends than most investments.

Even in the face of these self-evident records, it is difficult to convince some growers that windbreaks are worthwhile. They do not like to give the time, expense and necessary orchard area to "non-productive" trees. Hundreds of miles of hardy windbreak trees have been cut by new owners after a few years of subnormal winds, with disastrous results to the entire district.

Many growers fear root competition from windbreak trees, but such concern is based on lack of knowledge as to effective methods of control. The roots of the protective trees may be kept in bounds by deep sub-soil pruning.

Even light winds have a damaging effect on citrus trees. Fruit may be scarred by a wind of but fifteen or twenty miles an hour velocity. Some fruit will be shaken from the trees by a twenty-five or thirty mile wind, and stronger currents of forty miles an hour put most of the fruit in unprotected orchards on the ground.

The citrus crop in California heads the income list in this Midas-like, wealth-producing state, although the flow of living gold has been hard-won and tenuously held. But with the protecting arms of sturdy eucalyptus trees spread around orange and lemon groves, a windy rampage will do little damage, and a large crop will be assured.

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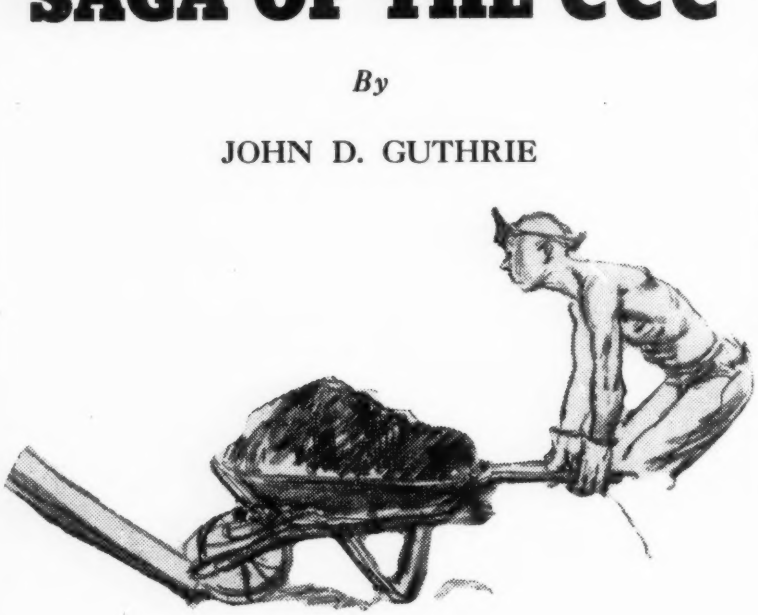
SAGA OF THE CCC

By

JOHN D. GUTHRIE



The American Forestry Association takes pleasure in announcing to its members and friends "THE SAGA OF THE CCC" by John D. Guthrie, with drawings by Marshall Davis.

James J. McEntee, Director of the Civilian Conservation Corps until its abandonment, says in his foreword:—

"Major Guthrie, the Author of the SAGA has known the CCC since its beginning in March, 1933. He was CCC Liason Officer at Fort Sam Houston, Texas, for over a year when he was transferred to Washington, as General Inspector for Department of Agriculture. He knows the CCC. His SAGA is, therefore, real. It is a vivid and dramatic picture of the camps, the enrollees, how they lived and how they worked.

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Keeping the Record Straight

(*Continued from page* 463)

policies ever since the Service was established. It is still supporting it with the single exception of disagreement over methods of bringing timber harvesting under public control and of attempting to impose control at a time when the nation is plunged in the greatest war in all history.

This Association, I desire to add, never has condoned forest destruction either in time of peace or war. It does not condone it now. It recognizes that it exists today, as it has in the past, and that the extraordinary war demands for wood may be widening and intensifying destructive lumbering. The extent is an open question. An offset is that more forests are being harvested now under improved forest practices than ever before. But whatever the extent of the destruction, we hold that every possible effort short of crippling prosecution of the war should be made to correct it. With the burdens of war resting upon everyone, particularly those straining to meet the government's call for war supplies, we believe that more can be accomplished to further both the war and improved forest practice by a federal policy of encouragement and cooperation than by one of condemnation and threat.

Apparently because we placed protection of our forest resources from fire as of first importance in a forestry war program, Mr. Clapp concludes that we hold fire prevention to be pretty much the sum and substance of forest perpetuation. We never have so held and do not now. We do hold that protection of forests from fire is a first essential of forest conservation because without it neither public nor private agencies can successfully engage in a long time undertaking of forestry. In our resolution we gave special importance to fire prevention not for the above reason alone but because, under war conditions and the probability of our enemies using forest fires as instruments of sabotage, they assumed special seriousness as threats to forest resources, war industries, transportation and power lines and manpower engaged in war work in many sections of our country.

In conclusion, Mr. Secretary, I desire to emphasize that our resolution was not directed to the Forest Service. Copies were sent not only to the President and to you, but to members of Congress, to the press and to civilian groups throughout the country. Its single purpose was to arouse our people—public officials and civilians alike—to a consciousness of those lines of emergency action in the forest field which in our judgment would contribute most directly and most immediately to the defense of our nation in peril. Subsequent events, we submit,

have confirmed the timeliness of the action and soundness of its substance.

I cannot refrain from expressing regret that before drawing conclusions from our resolution so contrary to the long-standing policies and principles of this Association, Mr. Clapp did not consult us personally. We welcome frank and open discussion and conference, and to this end we would feel honored and gratified if both you and he could arrange to be with us at our next Board meeting on November 19th mutually to clear our minds on questions which may be possible sources of misunderstanding now or in the future.

We are concerned, Mr. Secretary, over the fate of our nation. We want to work with you.

Very sincerely yours,
W. S. ROSECRANS,
President.

P.S. We respectfully ask that copies of this letter be sent to the mailing list used by the Forest Service in distributing Mr. Clapp's letter.

Fuelwood

(*Continued from page* 443)

growth is much retarded or has practically ceased. Thinning out the poorer individuals to make cordwood and leaving those with the straightest, cleanest stems and healthiest appearance will speed up the growth of the latter and increase the rate of interest earned by the timber capital."

And here is good advice to the woodlot owner. He is inviting trouble if he permits inexperienced choppers to go into his woods. It may be charitable to allow a family that is short in fuel and money to do so, but injury to his stand of timber may be permanent and far-reaching. Also, shortage of local labor of an experienced nature may work toward the same end.

Every tree to be cut should be carefully selected, well marked. To cut young, thrifty stands of desirable species for fuelwood is a betrayal of trust. There are thousands of acres that need improvement cutting and thousands of cords of fuelwood that can be taken out beneficially—now.

In other words, the forests and woodlots of America can meet this wartime demand for fuelwood just as they are meeting the need for lumber and other wood products on far flung battlefronts and in the war industries and training camps at home. But both harvests must be made with a view of a world at peace, as well as a world at war. On the day the last gun is fired in victory will begin an era of rebuilding—the rebuilding of men as well as their castles. And forests will be needed for this, too.

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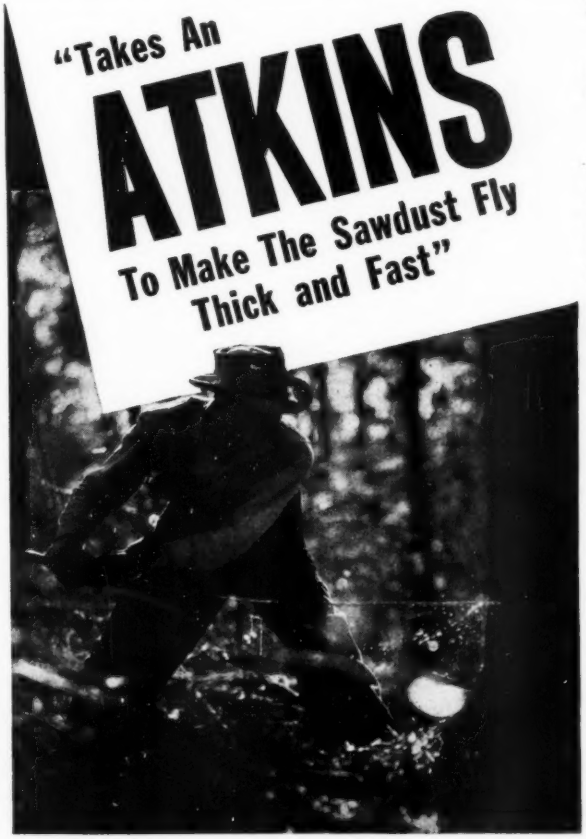

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THE LAST FRONTIER

(*Continued from page* 457)

on to the Christy ranch we reveled in every mile.

The Christys warned us as we were about to leave the following day to be on the lookout for rattlesnakes. There were hundreds along the Finger Board Trail ahead of us, they said. Either we were lucky or the Christys were spoofing us, for except for two my husband shot early that day we did not see a rattler on the entire trip.

The Finger Board Trail is not for weak-hearted people. Clinging to the side of a 5,000-foot precipice, it is but eight inches wide and zig-zags countless times on its way across the canyon wall. In all, perhaps not more than ten people use this trail throughout the year, and these are mostly sheepherders. I rode to the first saddle, leading the pack string; but on the descent to the Snake River I walked. Coming out a week later I made the ascent in good style, leading not only the pack string, but a rope from the last animal so that my husband could be towed up the steep trail. When I reached the saddle, however, every vestige of my nerve left me. It seemed certain that I could not face the descent; indeed, just looking at the narrow trail down which we must go made me shake all over. Eventually we made it, of course, but not until I had indulged in a good cry. Even then my husband had to lead the pack animals ahead while I followed on my horse.

Deep Creek lies at the foot of the Finger Board across the mountain from Cow Creek. In the heavily wooded upper reaches of this canyon we made our headquarters, camping there for nearly a week and making daily excursions to photograph the Breaks of the Snake. Our favorite view was from the Christmas Creek Landing Trail where the great river could be seen curving and coiling in the distant depths of the canyon. It was a magnificent sight.

During our stay here we also explored the Schleur Trail which crosses the mountain from Cow Creek to Little Deep Creek, and found that stretches of it were inches deep in pine needles. There were sections also where ruffed grouse, blue grouse and mountain quail were plentiful. We saw hundreds of these birds.

The entire region is one of magnificent scenery and also a challenge to those who seek the rigors of a pack trip in rough, undeveloped country. It is a true wilderness and should always be retained as such. A move to construct a north and south water level all-year highway through the canyon's length has strong support, but the idea shocks us beyond words. Nor, after our adventure in its rugged fastness, can we subscribe to the idea of creating a national park here. We can see no reason for it, cannot understand the need for any measure of development. As part of the Willowa National Forest, this magnificent region is already under government protection. Thus managed, it will always be unspoiled, undeveloped, a great wilderness heritage. Why not let the "last frontier," as Mrs. Christy called it, remain the last frontier?

GOVERNMENT SEEKS GAME REFUGE MANAGERS

To carry on the reclamation work of the federal government in turning exhausted lands back into natural habitats for wildlife of all kinds, the United States Civil Service Commission is seeking wildlife refuge managers. To fill vacancies in the various management areas throughout the country, under the direction of the Fish and Wildlife Service of the Department of the Interior, the Commission will accept applications up to October 19, 1942.

Assistant refuge managers, at a salary of $2,600, must have completed a four-year course in a recognized college. They must also have had two years of managerial experience in wildlife refuges. Junior managers, at a salary of $2,000, need not possess this experience, but must have completed a four-year college course.

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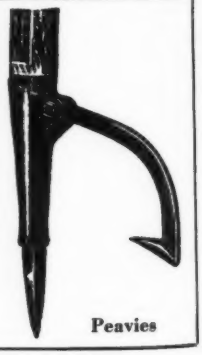

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WHEN THE MILLS GO DOWN

(*Continued from page* 455)

area closely restricted to conserve its flocks and herds of game. With a large and luxurious inn, a commodious lodge, comfortable cottages and cabins, Blaney Park is something like an old Colonial village, restored, in the midst of a wooded area that rises 800 feet above sea level. It contains several sizable lakes, miles of trout streams, and unexcelled cover for game. An ornithologist lives at Blaney the year round.

The owners have found that when the original loggers "let daylight into the swamp" and the highland woods by cutting off the pine, they gave the hardwoods a new lease on life. In the past twenty years such trees as maples have grown twice as fast as they did in the shelter of the tall pines. In another decade selective hardwood logging will be a major operation in the woods surrounding the resort. Spruce is now being cut for pulpwood.

The actual development of Blaney Park as a resort began in 1926. At the same time the Earle brothers, Harold and Stewart, began the practice of selective logging and reforestation. While the old buildings of Blaney were being restored and new ones erected, a nine-hole golf course, an airport, swimming and wading pools, tennis courts and a dude ranch were established. Many miles of new roads were pushed through, some on the abandoned logging grades; a lake was created in a swamp, and wire was run around the central area of 22,000 acres to protect it from game poachers.

Fifty miles to the west, at Nahma, Charles E. Good, president of the Bay de Noquet Company, is operating a 100,000-foot daily capacity sawmill. He also runs a dimension mill at Manistique and a sawmill at Oconto, Wisconsin. Although his mills still hum and sing, and have seven or eight years to go on their own raw timber before they go down, he is paving the way for some such salvage project as Blaney Park.

Nahma, which means "sturgeon" in Ojibway, is at the mouth of the Sturgeon River on the larger Bay de Noc, an arm of Green Bay. About seventy-five miles of standard gauge railroad feeds timber to the mill—pine, hemlock, spruce, hardwood. A large new camp was built last summer thirty miles north of Nahma in the midst of a heavy forest where pines still stand up to four feet in diameter. They are being felled, but in their cutting Charles Good is exercising judgment, with a long look into the future. He has left around each of the fifty lakes his company owns a ring of virgin forest, 300 feet wide, and he has built log cabins and encouraged others to build them along the lake shores.

Charles Good is planning the development of the 55,000 acres of timberland, as well as the town of Nahma, into a resort of unique character.

Nahma had already become noted as the center of an unusual "backwoods college" among the trees. Mr. Good is not only sponsor, prexy and dean of this summer school, but also the virtual angel of an August educational vacation for three score persons, faculty and students.

Suspended last summer because of the war, the outdoor college, when it resumes, will institute in its curriculum a major in forestry, wildlife conservation, and wooderaft. The instructors are practically volunteers. They come from the colleges, art schools, newspaper offices and the learned professions to teach classes—for their room and board. Students pay a small fee for instruction and room and board.

"Learn and Play the Nahma Way" is the school motto, and here the study of fiction writing, journalism, painting, photography, public speaking and other academic subjects is mingled with first-hand and on-the-ground study of practical forestry and forest conservation for the future of a new Nahma, another object lesson in what to do when the mills go down.

A boon to this project will be the new forest highway now being built from U. S. 2 at Nahma Junction, six miles north of the village, up to Munising on Lake Superior. It cuts through the heart of the Hiawatha National Forest, traversing sections of the Delta Woods holdings

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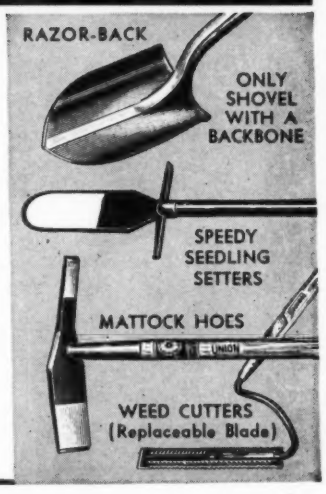

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of the Bay de Noquet Company, all of which are within the borders of the Hiawatha Forest. Some of this land will sometime be added to that national domain, but a large share of it will be developed, privately, as a huge resort in the woods.

It is too late to restore the ghost towns of the iron and copper country, far up in the northwestern end of the Upper Peninsula. Some of them do not even have shacks to mark the spot where one hundred years ago white men discovered the rich mineral wealth of the country.

But men like the Earles and Charles Good are setting out to lay the ghosts which might be howling around the bare rafters of a Blaney or a Nahma. And it is lumber that is furnishing the capital to do it—lumber grown out of the very ground.

Baldy of the Aleutians

(*Continued from page* 468)

a year ago. For Amchitka is the next island to the eastward of Kiska, and as this is written the Japs have held Kiska for three months. It is not unlikely the young eagles we visited that day have seen strange warbirds far larger than themselves sweep across the Aleutian skies, not unlikely that they witnessed the planting of a red-cored flag on those faroff American shores.

Certainly the Japanese invaders found these eagles or others like them soaring above the snow-streaked hills of Kiska when they landed; certainly they heard Old Baldy's fierce wild screams ring along the lonely beaches of Attu and above the pillaged hamlet of the Aleuts there on the last of America's western stepping stones.

Had the Mikado's legions listened intently they might have sensed an ominous note in those screams. Had they scanned the skies with their hearts as well as their eyes they might have recognized Old Baldy, winging alabaster-crowned in the early summer sun of the Aleutians, as a harbinger of other winged Americans to come.

Not for nothing does the bird of freedom nest there in the eastern hemisphere, beyond longitude 180, almost under the frowning sea cliffs of Asia. Where he makes his home Old Glory is not likely to be long denied access to the free wind!

He was there on the Aleutian beaches to greet the invader, to scream America's rage and defiance in his face. For that, perhaps it is not too much to hope that when the war is ended we will never again put a blood price upon his mailed talons, in Alaska or elsewhere under the flag he symbolizes.

WHO'S WHO
Among the Authors in This Issue

K. W. WOODWARD (*Wood As A Wartime Fuel*), a native Wolverine and one of our leading foresters, was educated at Cornell and Yale and "points with pride" to his instructors—Fernow, Roth, Clark, Toumey and Graves—trail-blazers all in forest education. Mr. Woodward has served with the Forest Service all over continental United States except the extreme Northwest, and for the last twenty-five years he has been teaching at the University of New Hampshire. ERLE KAUFFMAN is an associate editor of AMERICAN FORESTS.

K. W. Woodward

BEN EAST (*Baldy of the Aleutians*), militant conservationist and outdoor editor, has been campaigning for all kinds of wildlife with his pen and camera for over twenty years. He is a native of Michigan and has served as nature editor for a chain of daily newspapers looping from Grand Rapids and up to Flint.

CLAY PERRY (*When the Mills Go Down*), born in the North Woods at Badger, Wisconsin, knows and has loved the big timber from boyhood—when his ambition was to become a real "river man"—stagged pants, corked shoes, et al. But in later years he found a better and wider outlet for his woods enthusiasm in the literary field, as attested by his books and current writing.

ANNE CRAWFORD HOLST (*The Last Frontier*) is a former state forest fire warden for Kent County, Rhode Island. A well-known fire fighter, she has lectured extensively throughout New England, and is the author of numerous articles on forest fire fighting.

RUTH RINGLE (*Trees That Are Their Brothers' Keepers*), native Californian, started her career as a professional singer. She lives at Berkeley and her free-lance writing stemmed from doing her own radio broadcast continuities, and naturally took a biological trend, since that has been her major interest since school days.

JAMES WARDEN (*Armbands in the Forest*) is a West Virginia writer. For the present he is making his headquarters in Washington, D. C.

THE COVER—Racoon Visitor—Photograph by Walter J. Schoonmaker, courtesy New York State Nature Association.

DYNAMITE

THE BUILDER IN WAR AND IN PEACE

From a recent DU PONT "Cavalcade of America" broadcast over the coast-to-coast N.B.C. Red Network

AMERICA in the middle of the last century was an eager, vibrant young nation struggling to grow out to her wider boundaries —struggling, but balked. Then, in Switzerland, a man invented gun-cotton—in Italy, another man invented nitroglycerin—in Sweden, a man discovered dynamite—and science placed in her hand the great, mountain-moving lever that America needed.

There are old-time blasting men who remember the great nation-building jobs dynamite handled at the turn of the century; jobs like the Panama Canal, never before thought possible. Men who have worked with dynamite since Canal days, grateful for its safety, impressed by the amount of work it does, see in it a chemical tool of infinite potentiality for mankind's benefit, both for today and for the future.

Dynamite is a prime mover. In peace, America uses a million pounds of it every day—350 millions pounds of the various types each year, produced by 25 companies in 42 plants throughout the United States. Du Pont alone manufactures nearly 200 different types and grades of dynamite. "Nitramon," to single out one Du Pont blasting agent, is the safest known. Used especially in quarrying and oil prospecting, "Nitramon" can be held in a flame or riddled with rifle bullets without danger.

In this war year, America will use an estimated 450 million pounds of dynamite. Dynamite is helping to produce more steel, more coal, more copper! Dynamite helps speed cantonments and airports; excavations and harbors. On one island outpost of the United States dynamite is quarrying 20 million yards of rock for a single giant air base. Between British Columbia and Alaska, dynamite is helping to cut and surface a 24-foot roadway 1500 miles long—the Alaska Highway. In the Tennessee Valley dynamite has helped to bring power to our war industries from the great new dams—Norris, Hiwassee, Chicamauga, Cherokee and the others—to say nothing of Grand Coulee and Boulder and Shasta of the Great West. At one Navy ammunition storage dump it's helping build 3000 igloos, as they're called, each one of which stores a quarter of a million pounds of ammunition—bad news for America's enemies!

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